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# 1. Late expanding stage of population in India is due to?

a) Birth rate stationary death rate continues to fall

b) Death rate declines more than birth rate

c) Birth rate declines, death rate same

d) Birth rate is less than death rate

Correct Answer - B

Death rate declines more than birth rate [Ref Park 21/e p443 (20/e, p 411; 18/e, p349, 17/e p 325, 16/e p 319)]

In demographic cycle there are 5 stages:

1) High stationary - *high birth rate & high death rate which cancel each other*

2) Early expanding - *high birth rate - death rate begin to decline.*

3) Late expanding - *birth rate begin to fall*

- *death rate declines still further*

- *India is in this phase*

4) Low stationary - *low*

5) *w birth rate - low death rate*

6) Declining

- *birth rate is lower than death rate and population begins to decline.*

## 2. Fish is deficient in which of the following nutrients:

a) Iodine

b) Vitamin A

c) >Iron

d) >Phosphorus

Correct Answer - C

Iron [Ref- Park 20/e, p 546 (19/e p500)] Repeat from Nov 08

Though I am not very sure of the answer, the paragraph about Nutritional Profile of Fish on page no. 500 of Park 19/e suggests that the best possible answer could be Iron.

Park writes that-"Fish are less rich in iron than meat." All the other mentioned options are available in fish. Even fish is mentioned as a good source of iron on page no. 492.

Nutritional Profile of Fish

- Often referred to as "rich food for poor people," fish provides essential nourishment, especially quality proteins and fats (macronutrients), vitamins and minerals (micronutrients).
- Fats from fatty fish species contain the polyunsaturated fatty acids (PUFAs) namely EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) (omega 3 fatty acids)
- Fish liver oils are the richest source of vitamins A and D
- Fish bones are excellent source of calcium, phosphorus and fluorides.
- Fresh water fishes do not contain iodine but sea fishes are good source of iodine.
- The fishes practically do not contain any carbohydrates.

### 3. Incidence can be calculated by

a) Prospective study

b) Retrospective study

c) Case-control study

d) Cross-sectional study

Correct Answer - A

Prospective study

- Incidence can be calculated in prospective studies, examples of which are cohort studies, randomized controlled trials. Cohort studies are usually but not exclusively prospective. *[Note that in epidemiology a prospective study is sometimes used as a synonym for cohort study.]*
- Incidence is a measure of the risk of developing some new condition within a specified period of time. Although sometimes loosely expressed simply as the number of new cases during some period, it is better expressed as a proportion or a rate with a denominator. So in a case-control study incidence (as well as relative risk) cannot be calculated as there is no appropriate denominator or population at risk, to calculate these rates.

#### 4. Mass chemoprophylaxis is not given for one of the following:

a) Lymphatic filariasis

b) Plague

c) Vit A deficiency

d) Scabies

Correct Answer - D

Scabies [Ref: Park 21/e p248, 271, 592, 722 Wikipedia.org, [www.wellsphere.com/general-medicine-article/mass-drug-prophylaxis-against7filariasis/877981](http://www.wellsphere.com/general-medicine-article/mass-drug-prophylaxis-against7filariasis/877981)]

- Chemoprophylaxis refers to the administration of a medication for the purpose of preventing disease or infection. It can be
- Causal prophylaxis – Complete prevention of infection by early elimination of the invading or migrating causal agent.
- Clinical prophylaxis – is the prevention of clinical symptoms. It does not necessarily eliminate infection.
- Mass chemoprophylaxis is given on a large scale to a large part of community.
- In lymphatic filariasis – DEC is given to almost everyone in the community irrespective of whether they have microfilaraemia, disease manifestations or no signs of infection except children < 2 yrs of age, pregnant women and seriously ill patients. It is given in endemic areas. It is a kind of clinical prophylaxis as many people in endemic areas are asymptomatic, so giving drug will prevent progression to a clinical disease.
- Human plague – Tetracycline chemoprophylaxis i.s given to all contacts, medical, nursing and health personnel exposed to the risk of infection. During an outbreak they will comprise a large section of

community making it mass chemoprophylaxis.

- Vit. A prophylaxis- to prevent xerophthalmia is also done on a mass scale as a short term preventive measure.
- Scabies – To control scabies only the members of the affected household are treated simultaneously whether or not they appear to be infested. Thus it is given to close contacts only so it is not a mass treatment or mass chemoprophylaxis.

**5. Following are Larval control measures except:**

a) DDT

b) Paris green

c) Gambusia

d) Intermittent irrigation

Correct Answer - D

DDT [Ref: Park 20/e, p 676-677 (19/e 626)] Repeat from May 11

## 6. Incineration is not done for:

a) Cytotoxic drugs

b) Cotton contaminated with blood

c) Waste sharps

d) Human tissue

Correct Answer - C

Waste sharps *Repeat from May 11*

## 7. True about cluster sampling are all except

a) sample size is same as that of simple random sampling

b) it is a two stage sampling

c) it is cheaper than other methods of sampling

d) it has the disadvantage of higher sampling error

Correct Answer - A

Sample size is same as that of simple random sampling [Rer B K Mahajan 6/e p100; Park 20<sup>th</sup>/e p 752,753 (19/e p702)] Repeat from May 11

Cluster sampling refers to a type of sampling method . With cluster sampling, the researcher divides the population into separate groups, called clusters. Then, a simple random sample of clusters is selected from the population. The researcher conducts his analysis on data from the sampled clusters.

Compared to simple random sampling and stratified sampling , cluster sampling has advantages and disadvantages. For example, given equal sample sizes, cluster sampling usually provides less precision than either simple random sampling or stratified sampling. On the other hand, if travel costs between clusters are high, cluster sampling may be more cost-effective than the other methods

## 8. Disinfectant used for blood spills

a) Phenol

b) Glutaraldehyde

c) Ethanol

d) Sodium hypochlorite

Correct Answer - D

Sodium hypochlorite Common Disinfectants for Hospital Use

Group	Examples and Usage	Advantages and Disadvantages
PHENOLICS	Clear-soluble phenolic compounds. white fluids; 1.5% solutions; leave in contact for 1 hour.	Good general purpose disinfectants, not readily inactivated by organic matter, active against wide range of organisms (including mycobacteria) but not sporicidal.
HALOGENS	Hypochlorites (chloramine) eg "Milton", "Domestos", bleaches. Strong (2% Cl) to weak (0.02% Cl) concentrations used according to degree of blood contamination; leave in contact for 20 minutes	Cheap, effective, act by release of free chlorine, active against viruses and therefore recommended for disinfection of equipment soiled with blood ( <i>because of hepatitis risk</i> ), but rapidly inactivated by organic material and corrosive to metals.

ALCOHOLS	<p>3-10 minutes. Ethyl alcohol (ethanol), isopropyl alcohol (isopropanol).</p>	<p>Good choice for skin disinfection and for clean surfaces, sometimes used in combination with iodine or chlorhexidine, water must be present for bacterial killing (i.e. 70% ethanol best), isopropanol preferred for skin and articles in contact with patient.</p>
ALDEHYDES	<p>Glutaraldehyde ("Wavicide", "Aidel"); 1% solution, leave in contact for 30 minutes.</p>	<p>Kills vegetative organisms including mycobacteria slowly but effectively. More active, less toxic than formaldehyde, sporicidal (within 6 hours when fresh), irritant, used in alkaline solution which is stable 1-2 weeks, expensive, limited use e.g. disinfection of endoscopes.</p>

## 9. True about NPCDCS is all, EXCEPT:

- a) Separate centre for stroke, DM
- b) Implementation in some 5 states over 10 district
- c) CHC has facilities for diagnosis and treatment of CVD, Diabetes
- d) Day care facilities are available at subcentre

Correct Answer - C

The **NPCDCS program** has two components viz. (i) **Cancer** & (ii) **Diabetes, CVDs** & stroke.

These two components have been integrated at different levels as far as possible for optimal utilization of the resource.

The activities at State, District, CHC and Sub Centre level have been planned under the programme and will be closely monitored through NCD cell at different levels.

The strategies proposed will be implemented in 20,000 Sub Centres and 700 Community Health Centre in 100 Districts across 21 States during 2010-12

**Early diagnosis of diabetes, CVDs, Stroke and Cancer is done at District Hospital, not at CHC.**

**Ref:** NPCDCS Operational Guidelines, DGHS, GOI, Page 6;  
<http://health.bih.nic.in/Docs/Guidelines-NPCDCS.pdf>.

## 10. HIV sentinel surveillance is used to calculate:

a) Detection of high risk group

b) Prevalence

c) Monitoring disease trend

d) Detection of incidence

Correct Answer - C

HIV sentinel surveillance used to calculate Trend finding

### **HIV sentinel surveillance (HSS) in India**

- HIV sentinel surveillance (HSS) in India, since its inception in 1998, has evolved into a credible and robust system for HIV epidemic monitoring and acclaimed as one of the best in the world.
- Sentinel surveillance provides essential information to understand the trends and dynamics of HIV epidemic among different risk groups in the country
- It aids in refinement of strategies and prioritization of focus for prevention, care and treatment intervention under the National AIDS Control Programme (NACP)
- HIV estimates of prevalence, incidence and mortality developed based on findings from HIV Sentinel Surveillance enable the programme in assessing the impacts the impacts at a macro level.

**Ref:** Park 22nd ed/ 400.

**11. Disability certificate for poor vision if 4/60, is impairment percentage of:**

a) 100

b) 75

c) 40

d) 30

Correct Answer - B

Disability certificate for poor vision if 4/60, is impairment percentage of: 75%

**All with correction**

Category	Better Eye	Worse Eye	% Age Impairment
Category 0	6/9-6/18	6/24 to 6/36	20%
Category I	6/18-6/36	6/60 to Nil	40%
Category II	6/40-4/60 or field of vision 10-20	3/60 to Nil	75%
Category III	3/60 to 1/60 or field of vision 10	F.C. at 1 ft. to Nil	100%
Category IV	F.C. at 1 ft. to Nil or field of vision 10	F.C. at 1 ft. to Nil	100%
One eyed persons	6/6	F.C. at 1 ft. to Nil or field of vision 10	30%

**Note:** F.C. means finger count

**Ref:** OFFICE OF THE CHIEF COMMISSIONER FOR PERSONS

WITH DISABILITIES DISABILITY GUIDELINES : Categories of  
visual Disability:

**12. All of the following statements about purification of water are true, EXCEPT:**

a) Level of residual chlorine in water should be 0.5 mg / L

b) Presence of Clostridium spores indicates recent contamination

c) Coliforms must not be detectable in any 100 ml sample of drinking water

d) Coliforms may be detected by multiple tube method and indole production

Correct Answer - B

The presence of spores of Clostridium perfringens in a natural water suggests that faecal contamination has occurred, and their presence in the absence of the coliform group, suggests that faecal contamination has occurred at some remote time.

Its presence in filtered supplies may indicate deficiency in filtration practice.

These spores are capable of surviving in water for a longer time and usually resist chlorination.

**Ref:** Park's Textbook of Preventive and Social Medicine By K. Park, 19th Edition, Pages 58-1; Twort's Water Supply By Don D. Ratnayaka, 6th Edition, Pages 241-2, 247

**13.** According to the National Programme for Control of Blindness, who are supposed to screen the school students for vision problems?

a) Health assistants

b) School teachers

c) Medical officers of health centers

d) Ophthalmologists

### Correct Answer - B

In general vision problems present with difficulty in learning at school.

These children with eye sight problems undergo screening by their school teachers.

These children if they tend to have refractive errors, are then referred to the health assistants and ophthalmologists.

The National Programme for Control of Blindness was started in the year 1986 - 1989 in collaboration with WHO with the main aim of reducing the prevalence of blindness from 1.4% to 0.3% of population by 2000 AD.

By this programme it was facilitated to provide comprehensive health care facilities for primary, secondary and tertiary levels of eye health care. **According to the NPCB, the major causes of blindness in India are cataract, trachoma, smallpox, infections, injuries, vitamin A deficiency, glaucoma, aphakia, refractive errors, central corneal opacification and posterior segment disorders.**

The objectives of National Programme for Control of Blindness are as follows:

1. Through mass communication and extensive education programmes, people were to be educated about eye health care.
2. Certain units of eye care facilities were established in order to restore sight and alleviate eye ailments.
3. As a part of general health services, at peripheral, central and intermediate levels various permanent eye health care centres were established.

**Ref:** Park's Textbook of Preventive and Social Medicine, 19th Edition, Pages 76 – 78; Postgraduate Ophthalmology, Zia Chaudhari, Pages 2 - 17; Concise Textbook Of Ophthalmology By Sharma, Pages 208 - 211.

**14.** Which of the following statements about vaccines is NOT TRUE?

a) Thiomersal is preservative in DPT vaccine

b) Magnesium chloride is stabilizer used in OPV

c) Kanamycin is preservative in measles

d) Neomycin is preservative in BCG vaccine

**Correct Answer - D**

BCG vaccine contains a live attenuated strain derived from *Mycobacterium bovis*. It does not contain thiomersal or any other preservatives. It contains live organisms that have been attenuated.

Traces of antibiotics like neomycin is used as a preservative in varicella, polio virus (IPV), MMR vaccines.

**Ref:** Immunisation Against Infectious Diseases edited by David M. Salisbury, Mary Ramsay, Karen Noakes, 2006, Page 394.

**15.** Sampling error is classified as:

a) Alpha error

b) Beta error

c) Gamma error

d) Alpha error and Beta error

**Correct Answer - D**

Sampling error is a type of variation between one sample to another.

Due chance and concern either incorrect acceptance or rejection of null hypothesis.

Sampling errors arises because it is based on a part and not on the whole.

There are two types of sampling errors Type I or alpha error and type II or beta error.

The question is not specific, as it does not mention sampling error type I or type II we choose both alpha and delta.

**Ref:** Biostatistics By I.Saha and B. Paul, Page 74 ; Park's Textbook of Preventive and Social Medicine By K.Park, 18th Edition, Page 648

**16.** For Randomized Control Trial (RCT) to assess dating in adolescent, a study was done by selecting random schools, then random classes, then random sections and then random students. This is an example of:

a) Stratified sampling

b) Simple random sampling

c) Cluster sampling

d) Multistage sampling

Correct Answer - D

Multistage sampling technique is carried out in several stages by using random sampling technique. Multistage sampling is used when the population units are arranged in hierarchal groups (sampling school, the section and student).

**Sampling method:** in statistics, the sampling methods used are of two types – Random, / probability and non random / non probability sampling.

**I. Probability sampling:** A probability sampling method is any method of sampling that utilizes some form of random selection. In order to have a random selection method, you must set up some process or procedure that assures that the different units in your population have equal probabilities of being chosen. Humans have long practiced various forms of random selection, such as picking a name out of a hat, or choosing the short. Straw these days, we tend to use computers as the mechanism for generating random numbers as the random selection.

**a. Simple Random, sampling:** the simplest form of random sampling is called simple random sampling. In a simple random sample random sample of a given size, all such subsets of the frame are given an equal probability. Each element of the frame thus has an equal probability of selection: the frame is not subdivided or

partitioned

**b. Stratified sampling:** Where the population embraces a number of distinct categories, the frame can be organized by these categories into separate “strata”. A sample is then selected from each “stratum” separately, producing a stratified sample.

The two main reasons for using a stratified sampling design are  
To ensure that particular groups within a population are adequately represent in the sample and

To improve efficiency by gaining greater control on the composition of the sample. In

the second case, major gains in efficiency (either lower sample sizes or higher precision) can be achieved by varying the sampling fraction from stratum to stratum.

The sample size is usually proportional to the relative size of the strata.

**c. Systematic sampling:** Selecting (say) every 10th name the telephone directory is called an every 10th sample, which is an example of systematic sampling.

It is easy to implement and the stratification induce can make it efficient, but it is especially vulnerable to periodicities in the list.

If periodicity is present and the period is a multiple of 10, then bias will result.

It is important that the first name chosen is not simply the first list, but is chosen to be (say) the 7th, where 7 is a random integer in the range 1...,10-1. every 10th sampling is especially useful, for efficient sampling from databases

**d. Multi- stage or cluster sampling:** It is where the researcher divides the population into strata, samples the strata, then stratifies the samples, and then re-samples, repeating the process until the ultimate sampling units are selected at the last of the hierarchical levels. When the strata are geographic units, this method is sometimes called area sampling. For instance, at the top level, states may be sampled (with sampling proportionate to state population size); then cities may be sampled; then schools; then classes; and finally students.

**e. Cluster sampling:** The best way to find the immunization coverage will be by simple random sampling (30X7 cluster sampling)

of the beneficiaries i.e. children.

**30 cluster sampling method** for coverage evaluation survey (CES) of immunization coverage; method: A district is divided into 30 clusters (a cluster is a natural unit with some geographical delineation); 7 samples are taken from each cluster randomly. Each sample – a child in the age group 12 months to 23 months. Confidence levels are 95%. No with district comparison can be made. Thus, total sample size =  $7 \times 30 = 210$ . Coverage = Number completely immunized/ total sample size expressed as a percentage.

**Ref:** Basic Statistics and Epidemiology A practical guide by Antony Stewart p7.

**17.** In a population of 5000 people, 500 are already myopic on January 1, 2011, number of new myopic cases till December 31, 2011 is 9. Calculate incidence:

a) 1.8%

b) 2%

c) 5%

d) 20%

**Correct Answer - B**

**Incidence** =  $\frac{\text{Number of New cases}}{\text{Total population under risk}} \times 1000$

Incidence =  $90 / (5000 - 500) \times 1000 = 90 / 4500 \times 1000 = 2$

**Ref:** Park 22nd ed /p-58.

**18.** Percent of Indian GDP spent on health:

a) .012

b) 2

c) 10

d) 15

**Correct Answer - A**

**Health expenditure, public (% of GDP)**

- Health expenditure, public (% of GDP) in India was 1.37 as of 2009.
- Its highest values was 0.93 in 2005.

**Ref:** Planning Commission of India, GOI; <http://apps.who.int/nha.database> ;  
**Source:** World Health Organization National Health Account database (see <http://apps.who.int/nha/database> for the most recent recent updates).

**19.** In a population of 200 people with normal distribution. How many people would be included in 1 SD?

a) 136

b) 140

d) 150

**Correct Answer - A**

**The 68-95-99.7 Rule**

All normal density curves satisfy the following property which is often referred to as the Empirical Rule.

- 68% of the observations fall within one standard deviation of the mean. That is between

**20.** Which of the following is FALSE about breast milk?

a) It has an energy value of 70 kcal per 100 ml

b) Maximum milk output is seen at 12 months following delivery

c) Coefficient of uptake of iron is 70 per cent for breast milk

d) Uptake of calcium from breast milk is higher than that from cow's milk

**Correct Answer - B**

The mean output of breast milk at 0-2 months of lactation is 530 ml/day, at 5-6 months is 730 ml/day and at 11-12 months is 525 ml/day. Hence, during the first year, maximum milk output is seen at 5-6 months of lactation, while the minimum output is at 12 months.

**Ref:** Park's Textbook Of Preventive And Social Medicine, By K. Park, 19th Edition, Pages 422, 429, 430.

**21. Which of the following statement is TRUE about NPU (net protein utilization), used in protein quality assessment?**

- a) It is the ratio of energy from protein to total energy in diet
- b) It is the ratio between nitrogen retained by the body and total nitrogen intake multiplied by 100
- c) It is the amount of one amino acid per gram of a protein divided by the amount of same amino acid per gram of egg protein
- d) If the NPU is high the amount of protein requirement in diet is high

**Correct Answer - B**

**Net Protein Utilization (NPU)** is the ratio between nitrogen retained by the body and total nitrogen intake multiplied by 100.

It is a product of **digestibility coefficient and biological value divided by 100**. It gives a more complete expression of protein quality than the amino acid score.

In calculating protein quality, 1 gram of protein is assumed to be equivalent to 6.25 g of N.

**Ref:** Park's Textbook of Preventive and Social medicine, 19th Edition, Page 503.

**22.** Which of the following statements is true about BCG vaccination?

a) Distilled water is used as diluent for BCG

b) The site of injection should be cleaned with spirit

c) Mantoux test becomes positive after 48 hours of vaccination

d) WHO recommends Danish 1331 strain for vaccine production

**Correct Answer - D**

“Danish 1331” is the strain recommended by WHO for the production of vaccine. Since the 1967, the “Danish 1331” has been in use. The quality is regularly kept in check by the International Reference Centre at Copenhagen.

The diluent used in the BCG vaccine is normal saline and not distilled water.

The site of injection should be cleaned with normal saline before administering the injection.

The Mantoux test becomes positive after a period of 8 - 14 weeks.

**Ref:** Park’s Textbook of Preventive and Social Medicine 19th edition; pages 160 - 163.

**23.** You are the only medical officer of a PHC in a remote tribal area of Rajasthan. You had started Category-I DOTS for a 23 year old woman who is the mother of a 2 year old child. What chemoprophylaxis will you recommend for the child in this scenario? Note that the child is asymptomatic and Mantoux test is not available.

a) INH 3 mg/kg for 6 months

b) INH 5 mg/kg for 6 months

c) INH 3 mg/kg for 3 months

d) INH 5 mg/kg for 3 months

**Correct Answer - B**

Here since the child is asymptomatic and Mantoux test is not available, INH 5 mg/kg should be given for 6 months.

If Mantoux test was available, the child would have been given chemoprophylaxis for 3 months following which a Mantoux would have been done. If the induration was  $>$  or  $=$  6 mm chemoprophylaxis would have been given for another 3 months but if the induration was lesser than 6 mm then the chemoprophylaxis would have been discontinued.

***Dosages of Anti-tubercular Drugs***

<b><i>Drugs</i></b>	<b><i>Daily therapy°</i></b>	<b><i>Thrice weekly therapy°</i></b>
Isoniazid	5 mg/kg	10-15 mg/kg
Rifampicin	10 mg/kg	10 mg/kg
Pyrazinamide	25 mg/kg	35 mg/kg
Streptomycin	15 mg/kg	15 mg/kg
Ethambutol	15 mg/kg	30 mg/kg

**Ref:** Park, 21st Edition, Page 175.

**24.** True about OPV are all, EXCEPT:

a) We get quick immune response

b) It is a live vaccine

c) It is used in epidemic

d) Maternal antibody interferes with immune response

Correct Answer - A

Oral polio vaccine is live attenuated vaccine containing (type 1,2,3 polio strain)

It was described by Sabin in 1957, i.e. it is also known as Sabin vaccine

The vaccine progeny is excreted in the faeces and secondary spread occurs to household contacts and susceptible contacts in community. Non immunized persons may therefore, be immunized. Thus wide spread 'herd immunity' results even if only 66% of community is immunized. This property of OPV has been exploited in controlling epidemics of polio by administering the vaccine simultaneously in a short period to all susceptibles in a community. Live vaccine stimulates antibody formation by inducing mild infection in epithelial cell and the Peyer's patches.

Then the virus spreads to the other areas of body and produce antibody which prevent dissemination of the virus to the nervous tissue and paralytic polio.

The presence of circulating maternal antibodies may modify the infection created by the attenuated vaccine viruses and reduce both the serum and the gut response.

Production of antibodies take some time that's why we can't get quick response.

**Ref:** Park 22nd ed/p 187.

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**25.** Which of the following is the commonest cause of maternal mortality in India?

a) Sepsis

b) Abortion

c) Haemorrhage

d) Hypertensive disorders

**Correct Answer - C**

<b>Cause of maternal mortality</b>	<b>%</b>
Haemorrhage	38
Sepsis	11
Hypertension	5
Obstructive labour	5
Abortions	8

**Ref:** Park 21st edition, page 517.

**26.** Regarding experimental studies, in a randomized controlled trial (RCT) all are true, EXCEPT:

a) Baseline characteristics are comparable

b) Bias can be eliminated by double blinding

c) Sample size depends on the type of study

d) Dropouts are excluded from the study

**Correct Answer - D**

In **randomized controlled trial**, some losses to follow-up are inevitable due to factors, such as death, migration and loss of interest.

This is known as attrition. If the attrition is substantial, it may be difficult to generalize the results of the study to the reference population.

Every effort, therefore should be made to minimize the losses to follow-up.

**Ref:** Park's Textbook of Preventive and Social medicine, 19th edition, Page 76-78.

**27.** The pattern of change of disease trends of mortality and morbidity where the pandemic infections are replaced by degenerative and man-made disorders, the main cause of morbidity and the most frequent cause of fatality is known as:

a) Cross transition

b) Paradoxical transition

c) Epidemiological transition

d) Demographic transition

**Correct Answer - C**

Epidemiological transition is a phase of development witnessed by sudden and stark increase in population growth rates brought about by medical innovation in disease or sickness therapy and treatment

And followed by a leveling of population growth from subsequent declines in fertility.

**Ref:** Health Transition

<http://www.who.int/trade/glossary/story050/en/> Epidemiological transition theory was originally given by Abdel Orman in 1971.

## 28. Not included in the human poverty index is ?

a) % of population not surviving up to 40 years age

b) Underweight for age

c) Child literacy rate

d) % population not using safe water supply

Correct Answer - C

Ans. is 'c' i.e., Occupation

### Human poverty index (HPI)

o While the HDI measures average achievements in basic dimensions of human development, HPI measures deprivation in those dimensions.

o It is an indication of the *standard of living* in a country.

o The formula for calculating from that of developed countries :?

i) *Developing countries* —> HPI -1

ii) *Developed countries* —> HPI - 2

i) *Human poverty index -1 (Developing countries)*

Dimensions of HPI - 1 are -

1) A long and healthy life - vulnerability to death at early age -3  
*Probability at birth not surviving to age 40.*

2) Knowledge (adult literacy rate)

3) A decent standard of living —> *Percentage of population not using an improved water source and percentage of children under weight for age.*

*HPI -1 for India is 31.3%.*

ii) *Human poverty index-2 (developed countries)*

HPI-2 measures the deprivation in the same dimensions as HPI-1 and also captures social exclusion.

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Thus it reflects deprivation in four dimensions :?

- 1) A long and healthy life - vulnerability to death at early age ---  
> Probability at birth not surviving to age 60.
- 2) Knowledge (Adult literacy rate and gross enrolment ratio).
- 3) A decent standard of living Percentage of people living below the income poverty line.
- 4) Social exclusion ----> Rate of long term unemployment (12 months or more).

## 29. Socialization of medicine leads to all except ?

- a) Ensures complete utilization of services by all people
- b) Free medical care supported by state
- c) Eliminates the competition among physicians in search of clients
- d) Ensures social equity, universal coverage of health services

Correct Answer - A

Ans. is 'a' i.e. Ensures complete utilization of services by all people

### **Socialized medicine**

Socialized medicine describes a system for provision of medical service and professional education by the state as in state medicine, but the programme is operated and regulated by professional groups rather than by the government.

Eliminates the competition among physicians in search of clients.

It ensures social equity, that is universal coverage by health services

Provides free medical care, supported by state

\* However mere socialization is not sufficient to ensure utilization of health services. What is required is 'community *participation*' which as envisaged by WHO & UNICEF is "the process by which individuals and families assume responsibility for their own health and welfare and for those of the community, and develop the capacity to contribute to their and the community's development".

### **State medicine**

\* State medicine implies provision of free medical service to the people at government expense.

The above given definition of socialized medicine is according to Park, 19/e, & 18/e, p 9. The following websites give different view.

They write - *'The term Socialized Medicine is used to describe a system of publicly administered national health care. This system can range from programs in which the government runs hospitals and health organizations to programs in which there is national universal health care.'*

**30. Which of the following is not a feature of a cross sectional study -**

a) Not expensive

b) Observational study

c) Used for chronic diseases

d) Well suited for establishing interrelationships of diseases

Correct Answer - D

Ans. is 'd' i.e., Well suited for establishing interrelationship of diseases

*Why it is not possible to establish a cause and effect relationship ?*

*Lets see -*

\* To establish a cause and effect relationship, information about sequence of events is required, i.e. time sequence is required.

\* But, cross-sectional study is based on a single examination of a cross-section of population Exposure and disease are measured at the same point of time, it is not possible to distinguish whether the exposure preceded or followed the disease.

\* So, information about sequence of events can not be collected --  
> *cause and effect relationship can not be established.* o However, distribution patterns may suggest causal hypothesis which can be tested by analytic study -4 *Etiological hypothesis can be made.*

\* So, by cross sectional study etiologial hypothesis can be made, i.e. hypothesis about cause and effect can be made but it can not be confirmed (established). It is confirmed by analytic studies.

**31. In a study in UK, an association was found between sale of antiarrhythmic drug and an increase in deaths due to asthma. This is an example of?**

a) Ecological study

b) Cohort study

c) Case reference study

d) Experimental study

Correct Answer - A

Ans. 'a' i.e., Ecological study

**Ecological studies (Correlation Studies)**

\* Ecological study is an epidemiological study in which the unit of analysis is a population rather than an individual. o

Therefore, *ecological study utilizes data at the population level rather than the individual level.*

\* *The association between a disease and exposure is studied, e.g., there is a positive correlation between fat consumption and breast cancer in many nations. Conclusion is that fat consumption is a risk factor for breast cancer. o Ecological studies are valuable because they can be done easily and quickly by using population data that has already been collecting and seeking correlations between potential risk factor and various outcomes.*

\* Ecological studies may be more appropriate than other designs when studying the impact of an exposure on a community level.

\* An ecological study is normally regarded as inferior to non-

ecological designs such as case-control and Cohort studies because it is susceptible to ecological fallacy.

\* Ecological fallacy occurs when conclusions are drawn about individuals from the data that are associated with groups, as a relationship observed for groups may not necessarily hold for individuals.

In this question, an association between the sale of antiarrhythmic drugs and an increase in death due to asthma is given for the general population of 'UK' (not for individuals), so it is an example of an ecological study. Other options, case control (case-reference) study, Cohort study and experimental study (i.e., randomized controlled trials) have already been explained.

**32. According to latest guidelines of vaccination, which of the following is applicable at the age of 5 years ?**

a) DT booster + Vitamin A

b) DT

c) DPT + OPV

d) DPT + Vitamin A

Correct Answer - D

Ans. is 'd' i.e., DPT + Vitamin A

Recent changes in immunization guidelines in India.

2 doses of measles vaccine

First dose : 9 months

Scnd doese : 16-24 months

1 dose of JE live vaccine : 16-24 months

DPT booster : 5-6 years age

Vitamin A : Every 6 months till age of 5 years age (Starting at 9 months age)

**33. A 3 yr old completely unimmunised child comes to an immunization clinic at PHC for the first time. He should receive -**

a) BCG, Measles, Vitamin-A

b) DT-1, OPV-1, Measles, Vitamin-A

c) BCG, DT-1, OPV-1, Measles, Vitamin-A

d) DPT-1, OPV-1, Measles, Vitamin-A

Correct Answer - C

Ans. is 'd' i.e., DT-1, OPV-1, Measles, Vitamin-A

**Cases of Delayed Immunization:**

o A completely **unimmunized** child 9 months of age should receive: BCG, DPT-1 (next two doses one month apart each and booster after 1 year of 3<sup>rd</sup> dose), OPV-1 (next two doses one month apart each and booster after 1 year of 1<sup>st</sup> dose), HepB -1 (next two doses one month apart each), Measles, and Vitamin A (1 Lac IU)

o A completely unimmunized child 18 months of age should receive: BCG (Only after Mantoux Test: Indirect BCG), DPT-1 (next two doses one month apart each and booster after 1 year of 3<sup>rd</sup> dose), OPV-1 (next two doses one month apart each and booster after 1 year of 3<sup>rd</sup> dose), Measles (if not suffered from measles disease previously), and Vitamin A (2 Lac IU).

o A completely unimmunized child 30 months of age should receive: BCG (Only after Mantoux Test: Indirect BCG), DT-1 (NOT DPT; next two doses one month apart each and booster after 1 year of 3<sup>rd</sup> dose), OPV-1 (next two doses one month apart each and booster after 1 year of 1<sup>st</sup> dose), Measles (if suffered from measles disease previously), and Vitamin A (2 Lac IU).

*o A completely unimmunized child 4 years of age should receive: BCG (Only after Mantoux Test: Indirect BCG), DT-1 (NOT DPT; next two doses one month apart each and booster after 1 year of 3<sup>rd</sup> dose), OPV-1 (next two doses one month apart each and booster after 1 year of 3<sup>rd</sup> dose), Measles (if not suffered from measles disease previously) and Vitamin A (2 Lac 1U).*

**34. Using a new technique, Hb was estimated in a blood sample. The test was repeated for 10 times. The reports were : 9.5, 9.2, 9.4, 9.6, 9.7, 9.9, 10.2, 10.3, 10.5, 12.1. Accurate value of Hb was estimated by standard tests to be 10.2. The new technique has ?**

a) High validity and high reliability

b) Low validity and low reliability

c) High validity and low reliability

d) Low validity and high reliability

Correct Answer - B

Ans. is 'b' i.e. low validity and low reliability

Validity (Accuracy)

\* The validity of a test is the extent to which it *accurately measures which it purports to measure*. In other words its the *ability to show which individuals have the disease in question and which do not*.

\* Validity has two components - *sensitivity & specificity*. To be truly valid, a test should be highly sensitive, specific and unbiased.

- In this question the test results are not accurate (accurate value is 10.2) Test has low validity. Reliability (*or Repeatability, reproducibility or precision*)
- Reliability or precision or repeatability is *the level of agreement between repeated measurements of the same variable* i.e. a highly reliable test must give consistent results when repeated more than once on the same individual or material, under the same conditions.

- In this question test is not showing consistent results --> Test has low reliability.

### 35. High sensitive -

a) Low false positive

b) Low false negative

c) Low true negative

d) Low true positive

Correct Answer - B

Ans. is 'b' i.e., Low False negative

True positive is directly related to sensitivity

False negative is inversely related to sensitivity

True negative is directly related to specificity

False positive is inversely related to specificity

If a test has high sensitivity → more true positive, less false negative, and also more false positive.

If a test has high specificity → more true negative, less false positive and also more false negative.

**36. You have diagnosed a patient clinically as having SLE and ordered 6 tests. Out of which 4 tests have come positive and 2 are negative. To determine the probability of SLE at this point, you need to know-**

a) Prior probability of SLE; sensitivity and specificity of each test

b) Incidence of SLE and predictive value of each test

c) Incidence and prevalence of SLE

d) Relative risk of SLE in this patient

Correct Answer - A

Ans. is 'a' i.e. Prior probability of SLE; sensitivity and specificity of each test

\* Probability allows for an accurate method of calculating how much the likelihood of changes as new information (i.e., a test result) becomes available.

\* Probability of disease after a given test (post-term probability) can be calculated by (Bayes' theorem)

Post test probability = Pretest probability x Likelihood ratio

Pre test probability

\* It is the probability of disease before getting a test.

\* There is a principal "*The interpretation of new information depends on old information*".

\* That means the interpretation of a test result (post-test probability) depends on the probability of disease before test (pre-test probability).

\* *Pre-test probability depends on prevalence, infact prevalence rate*

is described as pre-test probability of having a disease.

Likelihood ratio

\* The *likelihood ratio* provides a direct estimate of how much a test result will change the probability of having the disease.

\* Tests results are often expressed as either positive or negative.

\* So, there is

A likelihood ratio for a positive test result (LR +), and

A likelihood ratio for a negative test result (LR-)

\* The *positive likelihood ratio (LR +)* tells us how much to increased the probability of a disease if the test is positive. It is calculated by following formula.

*The likelihood ratio is generally a better descriptor than sensitivity or specificity because it more directly describes the effect of a test result on the probability of disease and it incorporates both the sensitivity and specificity.*

So, *in short*

\* To know the probability of a disease after a test (post test probability) depends upon :

i) *Pretest probability* —> *Prevalence*

ii) *Likelihood ratio* —> *Specificity & sensitivity*

**37. If the systolic blood pressure in a population has a mean of 130 mmHg and a median of 140 mmHg, the distribution is said to be -**

a) Symmetrical

b) Positively skewed

c) Negatively skewed

d) Either positively or negatively skewed depending on the Standard deviation

Correct Answer - C

**Ans. is 'c' i.e., Negatively skewed**

Until now we have discussed about *normal standard distribution* where the curve is bilaterally symmetrical, *with no tail*, i.e. values are equally distributed on both higher and lower side of the mean.

Now we will discuss skewed distribution.

Skewed distribution (deviation)

Skewed distribution means data is asymmetrically distributed around the mean with either large number of low values & less high values, or large number of high values & less number of low values. *So, the distribution curve has a tail towards the values which are in lower number.*

Depending upon the values (high or low) skewed distribution can be divided into two types ?

**1) Negative skewed (left handed) distribution**

- Large number of high values (right sided values) with less no. of low values (left sided values).

- So, the tail is on left side.
  - Called negative skewed because tail is in negative direction (left side).
  - Mode > median > mean
- 2) Positive skewed (right handed) distribution**
- Large number of low values (left sided values) with few high values (right sided values).
  - **So, the tail is on right side.**
  - Called positive skewed because tail is in positive direction (right side).
  - Mean > median > mode
  - In this question median (140 mm Hg) is greater than the mean (130 mm of Hg) -4 negatively skewed (left handed) dispersion.

**38. If the grading of diabetes is classified as "mild", "moderate" and "severe" the scale of measurement used is -**

a) Interval

b) Nominal

c) Ordinal

d) Ratio

Correct Answer - C

Ans. is 'c' i.e., Ordinal scale

A. Categorical scale

1. Nominal scale

Nominal scale data are divided into *qualitative categories or groups, such as male /female, black / white, died / cured, attacked / not attacked, vaccinated / not vaccinated, urban / sub urban / rural.*

Example are *Race/ethnicity (black/white), marital status (married/unmarried), Religion (Hindu, Muslim/ .....), country of birth (India/Nepal ABO blood group, Gender (male/female), disease outcome (cured/ died), vaccination status (vaccinated/not vaccinated), Types of anemia (macrocytic/microcytic), and place of living (rural/urban) etc.*

*There is no implication of order or ratio, means that the data cannot be placed in a meaningful order.*

2. Ordinal Scale

Here the data can be placed into categories that can be *rank ordered* (eg. students may be ranked 1<sup>st</sup> / 2<sup>nd</sup> / 3<sup>rd</sup> / 4<sup>th</sup> in their class or into grades A/B/C, the activity of an animal can be rated on a scale of 1 to 6, hardness scale for water etc.)

However, there is *no information about the size of the interval* ie no conclusion can be drawn about whether the difference between the first and second students is the same as the difference between the second and third.

Example are *TAW staging of cancers, Severity of disease (mild, moderate, severe), social class (low, middle, high), classification of person on the base of height (short, medium, tall).*

3. *Dichotomous Scale is a type of nominal scale in which nominal data fall into only two groups eg black / white, died / cured, failed / passed.*

B. Metric scale

1. Interval scale

Interval scale data are like ordinal data in that they can be placed in a meaningful order; in addition, *they have meaningful intervals between items*, which can be measured.

- *eg: Temperature on the Celsius scale (the difference between 80° and 70° is the same as between 40° and 30°)*

However, interval scale data *do not have an absolute zero*, ratios of the scores are not meaningful ie 80° C of Celsius temperature is not twice as hot as 40°C because 0°C does not indicate a complete absence of heat.

2. Ratio Scale

A ratio scale has the same properties as an interval scale, however, because *it has an absolute zero*, meaningful ratio do exist.

*eg. weights, Height, Pulse rate, serum cholesterol, blood glucose, hemoglobin level, time, blood pressure, temperature on the Kelvin scale (not Celsius scale)* On the Kelvin scale, zero degrees indicate an absolute absence of heat, just as a zero pulse indicates an absolute absence of heartbeat.

Ratio of one value to other is meaningful. For example, pulse rate of 120 beats/minute is twice as fast as a pulse rate of 60 beats per minute, and 300°k is twice as hot as 150°k.

In this question data on diabetes are placed into categories that are ordered mild, moderate, sever ---> ordinal scale should be used.

Note ?

- *Temprature in celsius or fahrenheit* is measured on interval scale because 0° C does not indicate a complete absence of heat.

- *The temprature on kelvin scale (a ratio scale) —) zero degree refer to the absence of heat (purely a theoritical concept that has never been attained).*

*Also know*

- *Statistically most preferable scale of measurement metric scale*  
*Statistically least preferable scale of measurement --4 nominal scale.*

**39. A cardiologist wants to study the effect of an antihypertensive drug. He notes down the initial systolic blood pressure (mmHg) of 50 patients and then administers the drug on them. After a week's treatment, he measures the systolic blood pressure again. Which of the following is the most appropriate statistical test of significance to test the statistical significance of the change in blood pressure ?**

a) Paired t-test

b) Unpaired or independent t-test

c) Analysis of variance

d) Chi-square test

Correct Answer - A

**Ans. is 'a' i.e., Paired t-test**

**In this question :-**

\* Data is quantitative (BP)

\* Paired sample from same patients, before and after treatment.

- So, Paired t-test is the best.

**40. In assessing the association between maternal nutritional status and the birth weight of the newborns, two investigators A and B studied separately and found significant results with p values 0.02 and 0.04 respectively. From this information, what can you infer about the magnitudes of association found by the two investigators -**

a) The magnitude of association found by Investigator A is more than found by B

b) The magnitude of association found by Investigator B is more than found by A

c) The estimates of association obtained by A and B will be equal, since both are significant

d) Nothing can be concluded as the information given is inadequate

Correct Answer - D

Ans. is 'd' i.e., Nothing can be concluded as the information given is inadequate

## 41. When the confidence level of a test is increased which of the following will happen -

a) No effect on significance

b) Previously insignificant value becomes significant

c) Previously significant value becomes insignificant

d) No change in hypothesis

Correct Answer - B

Ans. is 'b' i.e., Previously insignificant values become significant because if you increase the confidence level the values which were previously outside the confidence interval will also come into that interval.

o For example : ?

i) If confidence level is 95% → 95% of total sample will be distributed within confidence limits and 5% data will remain outside the confidence limit.

ii) Now you have increased the confidence level to 99% 99% of data will be distributed within the confidence limits and 1% will remain outside. So 1% more data will become significant.

You can also see by formula

Confidence limit =  $1 - \text{Significance level}$

or Significance level =  $1 - \text{Confidence limit}$

So, If confidence level increases, significance level decreases, and you know : ?

*"The smaller the significance level (p value), the more significant the result said to be".*

## 42. Best method to compare new test and gold standard test -

a) Correlation study

b) Regressive study

c) Bland and altman analysis

d) Kolmogorov smimov test

Correct Answer - C

Ans. is 'c' i.e., Bland and altman analysis

### **Bland and Altman analysis**

\* A bland-altman plot is a method of data plotting used in analysing the aggrement between two different assay.

\* It is identical to a Tukey mean difference plot, which is what it is still known as in other field but was popularisd in medical statistics by bland and altman.

\* Bland and altman make the point that any two methods that are designed to measure the same parameter (or property) will have a good correlation when a set of samples are chosen such that the property to be determined vary a lot between them. A high correlation for any two methods designed to measure the same property is thus in itself is just a sign that one has chosen a wide spread sample. A high correlation does not automatically imply that there is good agreement between the two methods.

### *Construction of bland -Altman plot*

\* Consider set of n samples for examples,objects of unknown volume. Both assays for example, different methods of volume measurement are performed on each sample, resulting in 2n data points. Each of the n samples is then

represented on the graph by assigning the mean of the two measurements as the abscissa (x-axis) value, and the difference between the two values as the ordinate (y-axis) value..

\* It can also be used to compare a new measurement technique with a gold standard even so the interest of the Bland-Altman plot is contested in this particular case because the error pertains to the sole new measure.

### 43. Measles vaccination compagin between 9-14 years age for elimination is -

a) Keep up

b) Follow up

c) Mop up

d) Catch up

Correct Answer - D

Ans. is 'd' i.e., Catch up

WHO's measles elimination strategy comprises a three part vaccination strategy, i.e. :-

- i) Catch-up → One-time, nationwide vaccination campaign targeting usually all children aged 9 months to 14 years regardless of history of measles disease or vaccination status.
  - ii) Keep-up → Routine services aimed at vaccinating more than 95% of each successive birth cohort.
  - iii) Follow-up → Subsequent nationwide vaccination campaign conducted every 2-4 years targeting usually all children born after catch-up campaign.
- The priorities of countries persuing measles control include :-
    - i) Improve routine vaccination coverage level to at least 90%.
  - Active coverage of more than 90% in catch-up and follow-up campaigns or active coverage of more than 90% with routine second dose of measles vaccine.
    - iii) Establish case - based surveillance with laboratory confirmation of suspected cases and virus isolation from all chains of transmission.
    - iv) Conduct supplementary vaccination campaign together with

administration of vitamin 'A' in high risk areas.

- In India, measles is a major cause of morbidity and a significant contributor to childhood mortality. Prior to the immunization programme, cyclical increase in the incidence of measles were recorded every third year. With the increase in immunization coverage levels, the intervals between cyclic peaks has increased and the intensity of the peak minimized.
- Epidemic of measles occur if proportion of susceptible children is > 40%
- If measles is introduced in a virgin community, it infects > 90% of children. o Eradication of measles requires vaccine coverage >96%

**Following information has been added in 22<sup>nd</sup> Ve of Park**

- At the 2010 World Health Assembly, member states endorsed the following targets to be met by 2015 as milestones towards eventual global measles eradication : - (i) Raise routine coverage with the first dose of measles vaccine to . 90% nationally and 80% in every district; (2) Reduce and maintain annual measles incidence to < 5 cases per million; and (3) Reduce measles mortality by 95% in comparison with estimated level in the year 2000.

#### 44. BCG is not given to patient with -

a) Generalised Eczema

b) Infective dermatosis

c) Hypogammaglobulinaemia

d) All of the above

Correct Answer - D

**Ans. is 'd' i.e., All of the above**

Contraindications : - Unless specifically indicated, BCG should not be given to patients suffering from.

Generalized eczema

Infective dermatosis

Hypogammaglobulinaemia

Patient with history of deficient immunity

Being a live vaccine, it is also contraindicated in pregnancy.

## 45. Duration of MDR TB -

a) 8-12 months

b) 12-16 months

c) 16-24 months

d) 2-3 years

Correct Answer - C

**Ans. is 'c' i.e., 16-24 months**

Multi drug resistance TB (MDR TB) is referred to resistance to "isoniazid and rifampicin" with or without resistance to other drugs.

MDR-TB is classified as category IV under DOTS (DOTS -PLUS)

Treatment of Category IV (MDR-TB) includes;-

Intensive phase ( 4 months): KOCZEET

Continuation phase (12-18 months): OCEEt

Total duration 16-24 months

[letter:-E-Ethambutol, Z-Pyrazinamide, K-Kanamycin, O-Ofloxacin, Et-Ethionamide, C-Cycloserine]

In general treatment of MDR -TB is based on sensitivity of drugs and 5 or 6 of the drugs should be chosen in following order of preference ( based on known sensitivity) -

An aminoglycoside ( amikacin or kanamycin) or capreomycin > Pyrazinamide > Ethambutol > Fluoroquinolones. (moxifloxacin preferred) > rifabutin > cycloserine > ethionamide > PAS > clarithromycin > Linezolid > IFN -  $\alpha$  > thioridazine.

Extensive drug resistance TB ( XDR — TB) is referred to resistance to rifampicin and isoniazid as well as to quinolone and at least one of the following second line drug kanamycin, capreomycin or amikacin.

XDR — TB = resistance to INH, rifampicin, Quinolone, and capreomycin/kanamycin/ amikacin

Following information has been added in 22nd/e of Park

**Treatment of XDR-TB under daily DOTS : -**

Intensive phase (6-12 months) : - Capreomycin, PAS, moxifloxacin, clofazimine, linezolid, amoxicillin/ clavulanic acid.

Continuation phase (18 months) : - PAS, moxifloxacin (high dose), INH, clofazimine, linezolid, amoxicillin/ clavulanic acid.

## 46. True about complete eradication of poliomyelitis from India is -

- a) From 2012 onwards, no vaccine associated polio case has been detected
- b) Last polio case in India was reported in 13 January 2011
- c) Mostly IPV is used currently
- d) India is the only country which is not able to eliminate it completely

Correct Answer - B

Ans. is 'b' i.e., Last polio case in India was reported in 13 January 2011

### **Current polio situation 2013 in India :**

No wild case of polio in India currently.

    Last case was reported on 13 January 2011.

    VDPV in India : 5 cases all P2.

    OPV is mostly used in India (Routine immunizations, as well as pulse polio immunization).

## 47. Which of the following is incorrect about Scrub typhus ?

a) Causative agent is *R. tsutsugamushi*

b) Important reservoir is trombiculoid mite

c) The adult mite feeds on vertebrate host

d) Tetracycline is drug of choice

Correct Answer - C

Ans. is 'c' i.e., The adult mite feeds on vertebrate host

### Scrub typhus

o Caused by *orientia tsutsugamushi*

o *Reservoir of infection is the trombiculid mite.*

o It is transmitted to man by the bite of infected larval mites.

- *The nymphal and adult stages of the mite are free living in the soil; they do not feed on vertebrate host. It is the larva (chigger) that feed on vertebrate hosts and picks up the rickettsiae.*

o The infection is maintained in nature *trans-ovarially* from one generation of mite to next.

Mite Rats and mice ---> Mite Rats and mice Man

o Clinical features

I.P. ----> 10-12 days.

Chills, fever, headache, malaise.

Macular rash appear on 5th day.

Punched out ulcer with black eschar at the site of bite. o T/t -

Doxycycline is drug of choice for all rickettsial infections.

**48. In 2001 census, which one of the following denominators was used for calculating the literacy rate -**

a) Population 5 years of age and above

b) Population 7 years of age and above

c) Population 10 years of age and above

d) People who can read and write irrespective of age

Correct Answer - B

Ans. is 'b' i.e., Population 7 years of age and above

Literate India): Any person who can read and write, with understanding, in any one language of India and who is more than 7 years of age.

Literacy rate: Denominator is population >7 years of age

Crude literacy rate: Denominator is whole population (used earlier)

**49. In a certain population, there were 4050 births in last one year. There were 50 still births. 50 infants died within 7 days where as 150 died within 28 days. What is the neonatal mortality rate-**

a) 50

b) 62.5

c) 12.5

d) 49.4

Correct Answer - A

Ans. is 'a' i.e., 50

Neonatal deaths are deaths occurring during the neonatal period, commencing at birth and ending 28 completed days after birth.

Neonatal mortality rate is the number of neonatal deaths in a given year per 1000 live births in that year.

**50. Which of the following *is* an essential fatty acid ?**

a) Oleic acid

b) Stearic acid

c) Linoleic acid

d) Palmitic acid

Correct Answer - C  
Ans. is 'c' i.e., Linoleic acid

## 51. False statement regarding folic acid supplementation?

- a) Fortified in all wheat products in india like as in USA
- b) Preconceptionally given for prevention of neural tube defects
- c) It is present in leafy vegetables, spinach, paneer
- d) Requirement per day in pregnancy is 500 mcg

Correct Answer - A

Ans. is 'a' i.e., Fortified in all wheat products in India like as in USA  
o India has not yet adopted recommendation of fortification of all wheat products in India with folic acid.  
o All other options are correct.

## 52. Social pathology is-

- a) Change in disease pattern due to change in lifestyle
- b) Study of social problems which cause disease in population
- c) Conflicts arising from new opportunities in transitional societies
- d) Study of human relationships and behaviour

Correct Answer - B

Ans. is 'b' i.e., Study of social problems which cause disease in population

o *Social Pathology*: Is the study of social problems which undermine the social, psychological or economical health of the populations; it is used to describe relationship between disease and social conditions.

o *Social pathology is uncovered by 'Social surveys'*.

### 53. Recent mental health act in India is designated as ?

a) The mental health act

b) The mental health care act

c) The mental health care and rehabilitation act

d) The mental health treatment and rehabilitation act

Correct Answer - B

**Ans. is 'b' i.e., The mental health care act**

Recognizing that

Persons with mental illness constitute constitute a vulnerable section and are subject to discrimination; Families bear disproportionate financial, physical, mental, emotional and social burden of providing treatment and care: Persons with mental illness should be treated like other persons with health problems. The Mental Health Act, 1987 has not been able to adequately protect the rights of persons with mental illness and promote access to mental health care in the country.

And in order to :

o Protect, promote and fulfill the rights of persons with mental illness during the delivery of health care in institutions and in the community; Ensure health care, treatment and rehabilitation to persons with mental illness is provided in the least restrictive environment possible and in a manner that does not intrude on their rights and dignity. Community based solutions in the vicinity of the person's usual place of residence, are preferred to institutional solutions; Provide treatment, care and rehabilitation to improve the capacity of the person to develop his or her full potential and to facilitate his or her integration into community life; Fulfill obligations

under the Constitution of India and obligations under various International Conventions ratified by India, Regulate the public and private mental health sectors within a rights framework to achieve the greatest public health good: Improve accessibility to mental health care by mandating sufficient provision of quality public mental health services and non-discrimination in health insurance; Establish a mental health care system integrated into all levels of general health care; Promote principles of equity, efficiency and active participation of all stakeholders in decision making;

- o This act may be called *the* Mental Health Care Act, 2011.

## 54. Which of the following does not affect the Hardy Weinberg principle?

a) Small population

b) Random mating

c) Mutations

d) Gene outflow

Correct Answer - B

Ans. is 'b' i.e., Random mating

### **Hardy-Weinbergt ,aw of genetic equilibrium**

The Hardy-Weinberg law plays an important role in the field of *population genetics* and often serves as a basis for genetic inference.

The Hardy-Weinberg equation refers to a *state* in which the allele and the genotype frequencies do not change from one generation to the next in a population.

- Five conditions are required in order for a population to remain at Hardy-Weinberg equilibrium:

1. A large breeding population

2. *Random mating*

3. No change in allelic frequency due to mutation

4. No immigration or emigration

5. No natural selection

So, random mating maintains equilibrium (does not disturb or affect).

Non-random mating influences it.

## 55. Natural disaster causing maximum deaths

a) Hydrological

b) Meteorological

c) Geological

d) Fires

Correct Answer - A

Ans is 'a' i.e. Hydrological

Disaster

A "disaster" can be defined as '*any occurrence that causes damage, ecological disruption, loss of human life or deterioration of health and health services on a scale sufficiently large to warrant an extraordinary response from outside the affected community or area*'.

\* A "hazard" can be defined as any phenomenon that has the potential to cause disruption or damage to people and their environment.

- There are many types of disasters such as earthquakes, cyclones, floods, tidal waves, landslides, volcanic eruptions, fires, snowstorms, building collapse, toxicologic accidents, and warfare, etc.

\* *Hydrological disasters (i.e. floods, tsunamis) are associated with causing a maximum death toll.*

*Geological disasters:* includes Earthquakes, Avalanches & Volcanic eruptions

*Meteorological disasters:* include Cyclones, Tornadoes, Hailstorms, Drought, Heatwaves, Blizzards (*Blizzards are severe winter storms characterized by low temperature, strong winds, and heavy snow*).

**56. Epidemics after disaster are caused by all except?**

a) Leptospirosis

b) Rickettsiosis

c) Leishmaniasis

d) Acute respiratory infection

Correct Answer - C

**Ans. is `c' i.e., Leishmaniasis**

**Disease common in Post-disaster Phase**

Gastroenteritis (MC)

Acute respiratory tract infections (Pneumonia)

Leptospirosis

- Rickettsiosis
- Rabies
- **Equine encephalitis**

**57. High priority in triage is for -**

a) **Red color**

b) **Yellow color**

c) **Green color**

d) **Black color**

Correct Answer - A  
**Ans. is 'a' i.e., Red colour**

## 58. Which of the following is a MDG ?

a) Reduce by 2/3" the tinder five mortality by year 1990-2015

b) Halve the prevalence of HIV-AIDS by 2015

c) Reduce maternal mortality by 50%

d) Combat PEM & diarrhoea

Correct Answer - A

**Ans. is `a' i.e., Reduce by 2/3" the under five mortality by year 1990-2015**

**59. Number of health related goals in millennium development goals ?**

a) 1

b) 2

c) 3

d) 4

Correct Answer - C  
**Ans. is 'c' i.e., 3**

**60. Number of vision centers under vision 2020, a national program for control of blindness are -**

a) 20

b) 200

c) 2000

d) 20000

Correct Answer - D

Ans. is 'd' i.e., 20000

The proposed structure for vision 2020, NPCB :

Vision centres 20,000 (Primary level)

Service centres 2,000 (Secondary level)

Tranning centres 200 (Tertiary level)

Centres of Excellence 20 (COE)

## 61. ASHA gets remuneration on all except ?

a) Institutional delivery

b) Zero dose of OPV and BCG

c) Recording birth weight

d) Birth registration

Correct Answer - B

**Ans. is 'b' i.e., Zero dose of OPV and BCG**

**62. Which of following diseases is not under surveillance in Integrated disease surveillance project (P-Form)?**

a) Snake bite

b) Acute respiratory tract infections

c) Tuberculosis

d) Leptospirosis

Correct Answer - A

Ans. **is** 'a' i.e., Snake bite

**63. After the appearance of rash, prophylactic isolation of measles case is necessary for a minimum of:**  
***September 2007***

a) 2 days

b) 5 days

c) 7 days

d) 9 days

Correct Answer - B  
Ans. **B**: 5 days

**64. Denominator for maternal mortality rate is:**  
***September 2005, 2010, March 2013 (d, e, h)***

a) 100,000 pregnancies

b) 100,000 live births

c) 100,000 births

d) 100,000 population

Correct Answer - B

Ans. **B:** 100,000 live births

The maternal mortality rate is the number of maternal deaths due to childbearing per 100,000 live births. The crude death rate is the total number of deaths per year per 1000 people.

The perinatal mortality rate is the sum of neonatal deaths and fetal deaths (stillbirths) per 1000 births. The infant mortality rate is the number of deaths of children less than 1 year old per 1000 live births.

The child mortality rate is the number of deaths of children less than 5 years old per 1000 live births.

The standardised mortality rate (SMR)- This represents a proportional comparison to the numbers of deaths that would have been expected if the population had been of a standard composition in terms of age, gender, etc.. The age-specific mortality rate (ASMR) - This refers to the total number of deaths per year per 1000 people of a given age (e.g. age 62 last birthday).

**65. Human anatomical waste is put in:**  
***March 2007***

a) Yellow

b) Red

c) Blue

d) Black

Correct Answer - A

Ans. A: Yellow

**Colour coded biomedical waste bags ?**

- Yellow plastic bags for human anatomical, animal, microbiological and soiled waste.
- Red disinfected container or plastic bags microbiological waste, solid waste (IV tubes, catheters, etc.)
  - Blue or White plastic bag or puncture proof containers sharps, disposable tubings, etc .
  - Black Plastic bag or puncture proof containers discarded medicines, incineration ash, chemical waste.

**Categories of bio-medical waste in India**

1	Human anatomical waste
2	Animal waste
3	Microbiology and biotechnology waste
4	Waste sharps (used and unused needles, syringes, scalpels etc)
5	Cytotoxic drugs and discarded medicines
6	Solid waste (contaminated with blood and fluids including cotton, dressings, soiled plasters, beddings)

7	Solid waste (other than waste sharps such as rubber tubes, catheters and I.V sets)
8	Liquid waste
9	Incineration ash
10	Chemicals used in disinfection, insecticides

<b>Colour coding</b>	<b>Waste category</b>	<b>Treatment options</b>
Yellow	1, 2, 3, 6	Incineration /deep burial
Red	3, 6, 7	Autoclaving/Microwaving/chemical treatment
Blue/White translucent	4, 7	Autoclaving/Microwaving/chemical treatment and destruction/Shredding
Black	5, 9, 10	Disposal in secured landfill

**66. Black colour code is used in four colour code system of triage management in disaster for:**  
***March 2011***

a) Ambulatory patients

b) Low priority patients

c) Dead patients

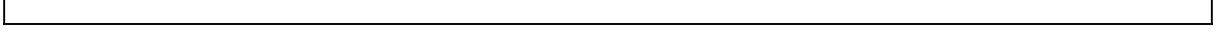
d) High priority patients

Correct Answer - C

Ans. C: Dead patients

**Black colour in triage indicates dead/ moribund persons Triage**

- After disasters such as earthquakes, hurricanes and train wrecks, triage often includes a system of color coding.
- The code changes in different countries and regions but four colors are almost universal:
- Black indicates dead,
- Red indicates that the patient needs immediate attention,
- Green indicates that a patient has only minor injuries.
- Yellow signals medium priority
- Sometimes the coding medium is as simple as rolls of colored tape.
- A person with some medical training--and a checklist--goes among the injured and wraps a strip of tape around the leg of an injured person.
- The checklists for disaster situations tend to be simple and omit injuries that might be hidden by clothing.
- Most ambulances are required to carry disaster triage checklists and color coding material



**67. OPV can be used if vaccine vial monitor is showing?**

a) Colour of outer circle is same as inner square

b) Colour of outer circle is darker than inner square

c) Colour of outer circle is lighter than inner square

d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Colour of outer circle is darker than inner square

## 68. Which is not included in NVBDCP ?

a) Dengue

b) Malaria

c) Japanese encephalitis

d) Plague

Correct Answer - D

Ans. is 'd' i.e., Plague

NVBDCP includes 6 *vector borne diseases* of public health importance in India :

1. *Malaria*
2. *Kala-azar*
3. Dengue
4. Japanese encephalitis
5. *Filaria*
6. *Chikungunya fever*

## 69. Test used to assess quantitative observations before and after an intervention ?

a) Unpaired T-test

b) Paired T-test

c) Chi-square test

d) Fisher-T-test

Correct Answer - B

**Ans. is 'b' i.e., Paired T-test**

**A paired t-test is used to compare two population means where you have two samples in which observations in one sample can be paired with observations in the other sample**

**this might occur in:**

- **Before-and-after observations on the same subjects (e.g. students' diagnostic test results before and after a particular module or course).**

- **A comparison of two different methods of measurement or two different treatments where the measurements/treatments are applied to the same subjects (e.g. blood pressure measurements using a stethoscope and a dynamap).**

Paired test : Is applied to paired data, when each individual gives a pair of observations such as : when observations are made before and after the play of a factor e.g. pulse rate before and after a drug. Further, it proceeds similar to the unpaired test.

## 70. Mid-day meals provided in schools provide ?

a) 1/2 of total calories & 1/2 of protein

b) 1/3 of total calories & 1/2 of protein

c) 1/2 of total calories & 1/3 of protein

d) 1/3 of total calories & 1/4 of protein

Correct Answer - B

Ans. is `b' i.e., 1/3<sup>rd</sup> of total calories & 1/2 of daily protein requirement

## 71. Best epidemiological study is -

a) RCT

b) Meta-analysis

c) Cohort study

d) Case-control study

Correct Answer - B

Ans. is 'b' i.e., Meta-analysis

Here are the different epidemiological studies with decreasing order of accuracy to test the association between risk factor and disease :?

1. Systematic review and meta-analysis → Overall most reliable
2. Randomized controlled trials (controlled clinical trials) → Most reliable individual study.
3. Retrospective (Non-concurrent/historic) Cohort study.
4. Prospective (concurrent) Cohort study.
5. Case control study
6. Cross-sectional study
7. Ecological study

**72. If the prevalence is very low as compared to the incidence for a disease. It implies:**

a) Disease is very fatal and/or easily curable

b) Disease is nonfatal

c) Calculation of prevalence and incidence is wrong

d) Nothing can be said as they are independent

Correct Answer - A

Ans. d. Multistage sampling

- 69. Multistage sampling, sampling procedure is carried out in several stages using random sampling techniques.
- Multistage sampling is used when the population units arranged in hierarchal groups (Sampling schools, then sections, then students).

**73. District population 10 lac, with under-16 are 30%, prevalence of blindness is 0.8/1000 of under-16 population. Calculate the no. of blind under-16**

a) 240

b) 2400

c) 24000

d) 240000

Correct Answer - A

Ans. a. 240

- Prevalence = 0.8/1000
- District Population = 10 Lakhs
- Under 16 = 30% of district population
- Hence, total population of under 16 = 3 Lakhs
- Hence, No. of blind under 16 =  $0.8 \times 3,00,000/1,000 = 240$

**74. All of the following are true regarding tetanus except:**

a) It is transmitted from person to person

b) Herd immunity is not of much value

c) The main reservoir is soil and intestine of animals and humans

d) Incubation period is 6-10 days

Correct Answer - A

Ans. a. It is transmitted

## 75. current percent of Indian ("DP spent on health

a) 1.2

b) 2

c) 10

d) 15

Correct Answer - A

Ans. a. 1.2

### **Health expenditure, public (% of GDP)**

Health expenditure, public (% of GDP) in India was 1.37 as of 2009.

Its highest value over the past 14 years was 1.37 in 2009, while its

lowest value was 0.93 in 2005.- Source: World Health Organization

National Health Account database (see

<http://apps.who.int/nha/database> for the most recent updates

### **Health expenditure % of GDP**

1995 1.22 2003 1.18

1996 1.15 2004 0.93

1997 1.25 2005 0.93

1998 1.30 2006 1.13

1999 1.28 2007 1.21

2000 1.27 2008 1.35

2001 1.31 2009 1.37

2002 1.19

**76. Which of the following is the most common cause of neonatal mortality in India**

a) Prematurity

b) Neonatal infection

c) Diarrheal disease

d) Congenital anomalies

Correct Answer - A

Ans. a. Prematurity

Prematurity accounted for 28% of Neonatal Mortality during 2000-2003, and is the most common cause of neonatal mortality in India.

**Major Causes of Neonatal Mortality During 2000-2003**

Pre-term birth°	28%
Severe infections	26%
Birth Asphyxia°	23%
Congenital anomalies°	8%
Neonatal tetanus	7%
Diarrheal diseases	3%
Other causes	7%

## 77. New cancer patients in India reported annually

a) 0.5 million

b) 1 million

c) 5 million

d) 10 million

Correct Answer - B

Ans. b. 1 million

- Incidence (new cases) of cancer in India: 1.0 million (approx.)  
Prevalence of cancer in India: 2.5 million
- **National Cancer Registry Programme (NCRP)**
- NCRP of the ICMR provides data on incidence from 25 population based registries and five hospital based registries
- Barshi, Maharashtra
- It is estimated that there are approximately 2-2.5 million cases of cancer in India at any given point of time
- (prevalence) with around 7-9 lakhs (approx. 1 million) new cases (incidence) being detected each year
- The six population based cancer registries in India cover a population of 34 million (18.4 million males and 15.6 million females)
- Four most frequent cancer in males in India: Mouth/oropharynx<sup>Q</sup> > Esophagus > Stomach > Lower respiratory tract (Trachea/ bronchus /Lungs)
- Four most frequent cancer in females in India: Cervix<sup>l</sup>) > Breast<sup>Q</sup> > Mouth/oropharynx > Esophagus
- Prevalence of cancer in India: 2.5 million<sup>o</sup>
- Incidence of cancer in India: 1.0 million<sup>o</sup> (approx

## 78. Screening are for trachoma is:

a) Below 5 years school child only

b) 1-9 years

c) 9-14 years

d) 5-15 years

Correct Answer - B  
Ans. b. 1-9 years

## 79. Rashtriya Swasthya Bima Yojana

a) Applies to BPL only

b) 30,000 per family member

c) 75% premium borne by family

d) Implemented all over India

Correct Answer - A

Ans. a. Applies to BPL only

- 83. provide health insurance coverage for Below Poverty Line (BPL) families.
- Beneficiaries need to pay only 30/- as registration fee while Central and State Government pays the premium to the insurer selected by the State Government on the basis of a competitive bidding.
- The key feature of RSBY is that a beneficiary who has been enrolled in a particular district will be able to use his/ her smart card in any RSBY empanelled hospital across India

**80. All of the following are true about Roll back malaria except:**

a) Insecticide-treated bed nets

b) Strengthening health system

c) Development of larvivorous fishes for the eradication of larvae.

d) Training health workers

Correct Answer - C

Ans. c. Development of larvivorous fishes for the eradication of larvae.

**The main strategies of Roll Back Malaria initiative are :**

- Strengthen the health system to ensure better delivery of health care, especially at the district and community level.
- Ensure the proper and expanded use of insecticide-treated mosquito nets.
- Ensure adequate access to basic health care and training of health care workers.
- Encourage the development of simpler and more effective means of administering medicines, such as training of village health workers and mothers on early and appropriate treatment of malaria, especially in children.
- Encourage the development of more effective and new anti-malaria drugs and vaccines.

**81. Highest mean and lowest mode indicates:**

a) Positive skewing

b) Negative skewing

c) Normal

d) Symmetrical

Correct Answer - A

Ans. a. Positive skewing

## 82. In WHO "Road to Health" chart, upper and lower limit of represents

a) 30 percentile for boys and 3 percentile for girls

b) 50 percentile for boys and 3 percentile for girls

c) 30 percentile for boys and 5 percentile for girls

d) 50 percentile for boys and 5 percentile for girls

Correct Answer - B

Ans. b. 50 percentile for boys and 3 percentile for girls

- In WHO "Road to Health" chart, upper limit of represents 50th percentile for boys and lower limit represents 3rd percentile for girls.

### **WHO-Home Based Growth Chart**

- WHO growth chart has 2 reference curves°:
- Upper Reference Curve (URC): 50th percentile for boys° Lower Reference Curve (LRC): 3" percentile for girls<sup>Q</sup>

### **Road to Health**

- ween two growth curves (weight channel).
- It includes zoSpace betne of normality for most populations, i.e. 95% of healthy normal children used as a reference fall in this area<sup>Q</sup>
- WHO reference curves are based on<sup>Q</sup>: NCHS Standards (National Centre for Health Statistics, USA)
- The 3" percentile (LRC) corresponds to approximately 2 SD below the median of weight-for-age reference value (LTRC)<sup>Q</sup>

### **Growth Charts**

- The growth or "road to health" chart (first designed by David Morely and later modified by **WHO**) is a visible display of the child's physical growth and development.
- Growth chart is generally plotted between: Weight and Age°

- It is designed primarily for longitudinal follow-up (growth monitoring) of a child, so that changes overtime can be interpreted.
- The purpose of the chart is early identification of growth failure so that action can be taken to prevent severe malnutrition.
- Changes in weight are the most sensitive indicators of growth and nutrition status in young children.

**Growth chart provides information on**

Identification and registration	Immunization procedures
Birth date and birth weight	Introduction of supplementary foods
Chronological age	Episodes of sickness
	Child spacing
Weight-for-age	(Contraceptive/family methods used)
Developmental milestones	
History of sibling health	Reasons for special care

**83. According to ICMR guidelines, what is the daily protein requirement of a girl age group 13-15 years of age**

a) 0.8 gms

b) 0.95 gms

c) 1.0 gms

d) 1.33 gms

Correct Answer - B

Ans. b. 0.95 gms

**84. Common to both acute and chronic malnutrition is:**

a) Weight for age

b) Weight for height

c) Height for age

d) BMI

Correct Answer - A

Ans. a. Weight for age

- For both acute and chronic malnutrition, best assessment can be done by weight for age. (AIIMS May 2007 Repeat)

**Indicators of Malnutrition**

Indicator Parameter Interpretation<sup>Q</sup>

Stunting	Low height for age	Chronic malnutrition <sup>Q</sup>
Wasting	Low weight for height	Acute malnutrition <sup>Q</sup>
Under weight	Low weight for age	Both acute and chronic malnutrition <sup>Q</sup>

## 85. Rashtriya Swasthya Bima Yojna is:

a) Low cost insurance scheme by general insurance companies

b) Industry associated insurance scheme meant for workers

c) Government health insurance scheme meant for the poor

d) Central government insurance scheme for

Correct Answer - C

Ans. c. Government health insurance scheme meant for the poor

- Rashtriya Swasthya Bima Yojana is Government health insurance scheme meant for the poor.
- Rashtriya Swasthya Bima Yojana provide health insurance coverage for Below Poverty Line (BPL) families. Objective is to provide protection to BPL households from financial liabilities arising out of health shocks that involve hospitalization."

**86. According to Vision 2020, the recommendations for secondary care services including cataract surgery is:**

a) 1 service center for 5000 population

b) 1 service center for 50,000 population

c) 1 service center for 5,00,000 population

d) 1 service center for 50,00,000 population

Correct Answer - C

Ans. c. 1 service center for 5,00,000 population

*According to Vision 2020, the recommendations for secondary care services including cataract surgery is 1 service center for 5,00,000 population.*

- 'Vision 2020': The Right to Sight, is a global initiative launched by WHO in 1999 in a broad coalition with a 'Task Force of International Non-Governmental Organizations (NGOs)' to combat the gigantic problem of blindness in the world.
- Government of India has adopted 'Vision 2020: Right to Sight' under National Programme for Control of Blindness
- *There is need to develop 2000 service centres at secondary level. Each with 2 Ophthalmologist and 8 paramedics (Hospital based MLOP), and one eye care manager covering a population of 5 Lacs*

## 87. Leprosy is not targeted for global eradication because

- a) No effective vaccine
- b) Highly infectious but low pathogenicity
- c) Only humans are reservoir
- d) Long incubation period

Correct Answer - D

Ans. d. Long incubation period

### **Certain epidemiological criteria which should be met before a disease qualifies for eradication**

- There should be no known animal reservoir°
- There should be no long-term carriers of the organism°
- Life-long immunity is attained after recovery from the disease°
- The detection of cases should be comparatively simple°
- Persons with subclinical infection should not transmit the disease°
- Vaccine should be highly effective, easily administered, heat-stable and should confer long-term protection°
- International co-operation°

Leprosy falls far short of these requirements and therefore, is not a suitable candidate for eradication

## 88. Which of the following is true regarding role played by social worker

a) Health professional responsible for functional evaluation and activities of the patient

b) Health professional responsible for instituting therapeutic exercises and mobility training of the patient

c) Health professional involved in the patients personal role performance, interpersonal skills and family functions

d) Health professional establishes and sustains the people with disability for employment

Correct Answer - C

Ans. c. Health professional involved in the patients personal role performance, interpersonal skills and family functions

- Best defined role of social worker among the given options: "Health professional involved in the patients personal role performance, interpersonal skills and family functions"

### **Physiotherapist**

- Health professional responsible for instituting therapeutic exercises and mobility training of the patient

### **Social worker**

- Health professional involved in the patients personal role performance, interpersonal skills and family functions
- *The principal work of the medical social worker is to visit the family and probe into the personal, economic, and social causes of illness and collect social history of the patient with a view to supplement medical history.*

### **Occupational therapist**

- Health professional establishes and sustains the people with

disability for employment

**89. The re-evaluation of a case of acute flaccid paralysis for residual paralysis for the purpose of AFP surveillance is done after how many days**

a) 60 days

b) 90 days

c) 6 months

d) 1 year

Correct Answer - A  
Ans. a. 60 days

## 90. Bias can be eliminated by all except

a) Matching

b) Blinding

c) Randomization

d) Multivariate analysis

Correct Answer - D

Ans. d. Multivariate analysis

- Multivariate analysis refers to the analysis of two or more dependent variables at a time. It is done after the study has been conducted, to analyze the study. While matching, binding and randomization all are done when the study is being conducted. (AHMS November 2010 Repeat).
- "Confounding factors are an important source of bias. This can be removed by matching in case-control studies."
- "The selection bias can be eliminated by randomization."
- "Interviewer's bias can be eliminated by double-blinding"

**91. A study found that an inverse relation exists between consumption of vegetables containing beta-carotene and development of cancer. This finding could also be because of other factors like fibers, which are also consumed by people along with the vegetables and which also prevents the development of cancer. This is an example of:**

a) Multifactorial association

b) Differential misclassification

c) Confounding factor

d) Common association

Correct Answer - C

Ans. c. Confounding factor

- In the given study, protective factor is being studied. But as high fiber content of vegetarian food is protective against carcinoma colon, it can confound or distort the observed protective role of beta-carotene present in vegetarian food. Thus this is an example of confounding factor.
- "In an epidemiological study, in addition to the exposures that the study is investigating, there may be other factors that is associated with the exposure and independently affects the risk of developing disease. If the prevalence of these other factors differs between grouped being compared, they will distort the observed association

between the disease and exposure under study. These distorting factors are called confounding factors or variables."

**Confounding**

- Any factor associated with both exposure and outcome, and has an independent effect in causation of outcome is a confounder<sup>Q</sup>
- It is found unequally distributed between the study and control groups
- Is associated with both exposure and outcome
- Has an independent effect in causation of outcome (thus is a risk factor itself)

## 92. Food with maximum cholesterol content

a) Egg

b) Coconut Oil

c) Hydrogenated Fats

d) Ghee (Hydrogenated)

Correct Answer - A

Ans. a. Egg

- Food with maximum cholesterol content is egg.
- "The yolks of eggs have the most cholesterol of any food with 1234 mg pr 100 gram serving or 411% of the DV. A single egg yolk will provide 210 mg (70% DV) of cholesterol, while a whole egg provides slightly more with 212 mg

### **Important points about Egg**

- All the cholesterol in egg is found in the yolk<sup>Q</sup>
- Egg white does not have any cholesterol<sup>o</sup>
- Egg contains all the nutrients except carbohydrates and vitamin C<sup>Q</sup>.
- Egg protein is considered the best among food proteins and is the standard against which the quality of other proteins is comparee.
- NPU of egg protein is 100<sup>Q</sup>

**93. Filaria elimination is possible in South-East Asian region due to all of the following except:**

a) Humans are the only reservoir

b) Parasite does not multiply in the intermediate host mosquito

c) Larva multiply in human reservoir only

d) Infectious larva get deposited on skin but most of them die before penetrating

Correct Answer - A

Ans. a. Humans are the only reservoir

**94. Which of the following is not true for incubation period**

a) To differentiate between secondary attacked and coincident primary cases

b) To determine the period of isolation of cases

c) To determine the period of quarantine

d) To prevent disease in contacts

Correct Answer - B

Ans. b. To determine the period of isolation of cases

## 95. True about Indian reference male is:

a) Age 20-39 years

b) Weight 65 kg

c) Work is mainly sedentary

d) Works for 10 hours

Correct Answer - A

Ans. A >Age 20-39 years

To determine the period of isolation of cases (Ref: Park 23/e 09 21/94, 111; Park 20,e p69-70, 78

*The duration of isolation is determined by the duration of communicability of the disease and the effect of chemotherapy on infectivity."* - Park 21/94

Importance of Incubation Period in Epidemiology

- Tracing the source of infection and contacts
- Period of surveillance. • Immunization
- Identification of point source or propagated epidemics
- Prognosis

**96. According to The Workmen's Compensation Act, 1923, which of the following is considered an occupational disease**

a) Typhoid

b) Anthrax

c) Tetanus

d) Dengue

Correct Answer - B  
Ans. b. Anthrax

**97. According to Vision 2020, the recommended Ophthalmologist: population ratio in India**

a) 1:5,00,000

b) 1:1,00,000

c) 1:50,000

d) 1:10,000

Correct Answer - C

Ans. c. 1:50,000

According to Vision 2020, the recommended Ophthalmologist: population ratio in India 1:50,000

**98. An investigator obtained an increased incidence of a disease due to low fiber diet in a country by obtaining data from the health authorities and food industry of the country. This type of study is known as:**

a) Ecological

b) Cross-sectional

c) Psephological study

d) Experimental study

Correct Answer - A  
Ans. a. Ecological

**99. In a certain population, there were 4050 births in the last one year. There were 50 still-births. 50 infants died within 7 days whereas 150 died within the first 28 days. What is the neonatal mortality rate**

a) 50

b) 62.5

c) 12.5

d) 49.4

Correct Answer - A

Ans. b. 50

Total number of births in one year 4050

Number of still births in that year =50

Hence, total number of live births in that year =4050 – 50  
4000

Total number of infants dying in the first 7 days =50

Total number of infants dying in the next 21 days 150

**100. Population attributable risk is defined as the difference between:**

a) Incidence in exposed and incidence in non-exposed compared with incidence in non-exposed

b) Incidence in population and incidence in exposed compared with incidence in population

c) Incidence in population and incidence in non-exposed compared with incidence in population

d) Incidence in population and incidence in exposed compared with incidence in non-exposed

Correct Answer - C

Ans. c. Incidence in population and incidence in non-exposed compared with incidence in population  
population attributable risk is defined as the difference between incidence in population and incidence in non-exposed compared with incidence in population.

## 101. Screening under RNTCP emphasizes on:

a) Sputum microscopy

b) Chest X-ray

c) PCR

d) Sputum culture

Correct Answer - A

Ans. a. Sputum microscopy

Over-reliance on chest X-ray was a drawback of National Tuberculosis Programme (NTP) which was overcome by Revised National Tuberculosis Control Programme (RNTCP) which started diagnosing patients by sputum microscopy.

'A nation-wide network of RNTCP quality assured designated sputum smear microscopy laboratories has been set up, providing appropriate, available, affordable and accessible diagnostic services for TB suspects and cases.'

**102. Indicator used in RNTCP to measure the impact of the control measures is:**

a) Prevalence of infection

b) Incidence of new cases

c) Annual infection rate

d) Number of people having access to DOTS

Correct Answer - C

Ans. c. Annual infection rate

Indicator used in RNTCP to measure the impact of the control measures is annual infection rate.

'Incidence of infection: This parameter is considered one of the best indicators for evaluating the tuberculosis problem, its trend and effectivity of control programme- Park

### 103. Which of the following is not true about cataract surgery rate?

a) Cataract surgery rate is defined as total number of cataract surgeries performed per million population

b) A target cataract surgery rate of 3000 per million

c) Cataract surgery rate is a true rate

d) It is an indicator success of blindness control

Correct Answer - C

Ans. c. Cataract surgery rate is a true rate

CSR is defined as (Total number of cataract surgeries performed/Total population) x 1,000,000'

Conventionally, a rate as defined in epidemiology has a numerator which is related to and derived from the denominator and has a specific time dimension (such as one year). As against 'rates, CSR is a proportion, where the numerator may not be derived from the denominator.

Cataract surgical rate is a quantifiable measure of the delivery of cataract services in a country. It is thus a good indicator of how well a country is organizing its efforts in tackling-cataract-related blindness.'

A CSR of 3000 was targeted under Vision 2020: the right to sight, for India, by the year 2000. Current trends show that this target has been achieved, but still there are regional disparities across the country

#### **Cataract Surgical Rate (CSR)**

- CSR is defined as '(Total number of cataract surgeries performed/Total population) x 1,000,000'
- Conventionally, a rate as defined in epidemiology has a numerator

which is related to and derived from the denominator and has a specific time dimension (such as one year).

- As against 'rates', CSR is a proportion, where the numerator may not be derived from the denominator-Q.
- Cataract surgical rate is a quantifiable measure of the delivery of cataract services in a country. It is thus a good indicator of how well a country is organizing its efforts in tackling cataract-related blindnessQ.
- There has been a substantial increase in CSR in India especially after the inception of the World Bank-supported Cataract Blindness Control Project
- A CSR of 3000 was targeted under Vision 2020<sup>Q</sup>: the right to sight, for India, by the year 2000. Current trends show that this target has been achieved, but still there are regional disparities across the country

## 104. A pandemic of H1N1 is suspected when?

a) Cases occur within 2 weeks period

b) Cases are spread over 5 or more cities

c) At least one or more laboratory confirmed H1N1 case

d) 25 or more people are affected

Correct Answer - B

Ans. b. Cases are spread over 5 or more cities

'If there is 25 or more epidemiologically linked suspect cases of Pandemic Influenza A H1N1 of which at least one or more are laboratory confirmed for Pandemic Influenza A H1N1, in two or more cities, over a period of two weeks, then the state would be considered to be having community spread.'

**105. School closure is recommended during an outbreak of swine flu. All of the following support this except:**

a) Closure of school will not lead to reduction in contact between children

b) Children are the most common affected population by swine flu

c) Increased rates of transmission due to more opportunities for contact

d) Playing together of students increases transmission

Correct Answer - A

Ans. a. Closure of school will not lead to reduction in contact between children

It was estimated that school holidays reduced the reproduction number of Influenza H1N1 by 14-27% in different regions of India, relative to levels seen outside holiday periods. This work reinforces studies showing the significant impact of school holidays on spread of pandemic influenza virus, and by inference the role of contact patterns in children on transmission.'-

<http://www.ncbi.nlm.nih.gov/pubmed/24267871> Transmission dynamics of the 2009 influenza A (H1N1) pandemic in India: the impact of holiday-related school closure. J Epidemics

**106. H5N1 Avian influenza has not become an epidemic till now. What is the most important reason for this?**

a) Seen only in wild birds and not in domestic poultry

b) It has avian influenza genes

c) Human to human transmission is rare

d) It causes serious illness leading to death of the patient

Correct Answer - C

Ans. c. Human to human transmission is rare

H5N1 Avian influenza has not become an epidemic till now. Human to human transmission is rare; this is the most important reason. Fortunately, the transmission of the current H5N1 virus is inefficient (Human to human transmission is rare). Most patients with H5N1 infection present with pneumonia. However, if antigenic recombination occurs between H5N1 influenza and a strain of influenza, which is highly infectious for humans, sustained human-to-human transmission could give rise to a pandemic, similar to the Spanish pandemic of 1918. This concern has spurred efforts to develop a vaccine.'

## 107. Which of the following statement is true about ESI act?

a) Funeral benefit is up to 50, 000

b) The state government share of expenditure on medical care is 1/8; the ESI corporation's share of expenditure on medical care is 7/8 of total cost

c) Person with daily wages of 70 has to contribute 300 towards ESI

d) Employee has to contribute 4.75% and employer contributes 8.75%

Correct Answer - B

Ans. b. The state government share of expenditure on medical care is 1/8; the ESI corporation's share of expenditure on medical care is 7/8 of total cost

ESI Act: The State Government's share of expenditure on medical care is 1/8; the ESI Corporation's share of expenditure on medical care is 7/8 of total cost'

### **Employees State Insurance Act (1948):**

- Funeral benefit is up to 5000
- The State Government's share of expenditure on medical care is 1/8 of total cost of medical care; the ESI Corporation's share of expenditure on medical care is 7/8 of total cost of medical care.
- Person with daily wages of less 70 per day are exempted from making any payments
- The employer contributes 4.75 % of total wage bill; the employee contributes 1.75 % of wages.

### **Employees State Insurance Act (1948)**

- Scope of ESI Act: The act covers all the factories in India excluding

mines, defense, railways, educational institutions<sup>0</sup>

- Act in the first instance applies to: All non-seasonal factories, employing 10 or more persons, for wages on any day in implemented areas. It also covers shops, hotels and restaurants, cinemas and theatres, road- motor transport establishments and newspaper establishments
- It covers all states except Nagaland, Manipur, Tripura, Sikkim, Arunachal Pradesh and Mizoram and UTs of Delhi, Pondicherry and Chandigarh<sup>(</sup>
- It covers all employees getting income up to 15,000/ per month

**Administration:**

- The Union Minister of Labour is the Chairman of ESI Corporation

**Finance:**

- The scheme is run by contributions by employees and employers and grants from Central and State Governments.
- The employer contributes 4.75% of total wage bill; the employee contributes 1.75 % of wages
- The State Government's share of expenditure on medical care is 1/8 of total cost of medical care; the ESI Corporation's share of expenditure on medical care is 7/8 of total cost of medical care

**Benefits to employees under ESI Act**

Medical benefit	Full medical care <sup>Q</sup>
Sickness benefit	50% of the average daily wages and is payable for 91 days <sup>(</sup> (in any continuous period of 365 days)
Extended sickness benefit	Payable for 2 years for a set of 34 diseases <sup>Q</sup>
Enhanced sickness benefit	Full average daily wage for duration up to 7 days in the case of Vasectomy and up to 14 days in the case of the Tubectomy <sup>P</sup>
Maternity benefit	Full average daily wage for duration up to 12 weeks (confinement) or 6 weeks (miscarriage or MTP) or 4 weeks (sickness arising out

	of pregnancy, confinement, premature birth), as the case may be
Temporary disablement benefit	70% of the average daily wages till recovery
Permanent disablement benefit	Pension (full/partial) as worked out by a medical board
Dependent's benefit	Pension at rate of 70% of wages
Funeral expenses	Cash not exceeding Z 50000
Rehabilitation benefit	

## 108. Most efficient larval control method to prevent transmission of urban malaria:

- a) Covering overhead tanks
- b) Cleaning of drains
- c) Filling of ditches and cesspools
- d) Uprooting of plants

Correct Answer - B

Ans. b. Cleaning of drains

Most efficient larval control method to prevent transmission of urban malaria is cleaning of drains.

Anopheles mosquitoes their breeding places should be looked for and abolished by appropriate engineering measures such as filling and drainage.

Culex . There should be a programme for the abolition of domestic and peridomestic source of breeding such as cesspools and open ditches. Arrangements should be made for adequate collection, removal and disposal of sewage and waste water.

Aedes - The environment should be cleaned up and got rid of water holding containers such as discarded tins, empty pots, broken bottles, coconut shells and similar other artificial collections of water.

Anopheles - Their breeding places should be looked for and abolished by appropriate engineering measures such as filling and drainage.

Mansonia . The aquatic plants to which the larvae attach themselves should be removed or destroyed by herbicides.

. Source reduction methods generally produce permanent results



**109. You are a doctor. You visit a village and want to make a quick estimate of the infant population of the area. Which of the following measures can you use?**

a) Number of TT injections in last one year

b) Number of follifer tablets consumed in one year

c) Female population in reproductive age group

d) Literacy rate

Correct Answer - B

Ans. b. Number of follifer tablets consumed in one year

Number of folifer tablets consumed in one year

Folifer tablets contain Folic acid, which is necessary for proper red blood cell formation. It plays a role in the metabolism of fats, amino acids, DNA and RNA (genetic material). It is needed for proper cell division and protein synthesis.

Folifer tablets also contains Ferrous Fumarate, a source of iron, which is a constituent of hemoglobin that transports oxygen throughout the body.

Folic acid is strongly recommended for women before and during pregnancy

## 110. Which of the following is not an objective of Mental Health Act, 1987?

a) Promote community participation

b) Application of mental health knowledge in general health care

c) Minimal mental health care for all

d) Human rights for mentally ill

Correct Answer - D

Ans. d. Human rights for mentally ill

- The National Mental Health Programme was launched during 1982 with a view to ensure availability of Mental Health Care Services for all, especially the community at risk and underprivileged section of the population, to encourage application of mental health knowledge in general health care and social development.
- National Mental Health Programme (NMHP)
- The National Mental Health Programme was launched during 1982 with a view to ensure availability of Mental Health Care Services for all, especially the community at risk and underprivileged section of the population, to encourage application of mental health knowledge in general health care and social development().

### **Aims:**

- Prevention and treatment of mental and neurological disorders and their associated disabilities
- Use of mental health technology to improve general health services
- Application of mental health principles(' in total national development to improve quality of life.

### **Objectives:**

- To ensure availability and accessibility of minimum mental health care for all in the foreseeable future, particularly to the most

vulnerable and underprivileged sections of populationQ

- To encourage application of mental health knowledge in general health care and in the social developmen'.
- To promote community participation in the mental health services development, and to stimulate efforts towa

**111. . In a sampling technique, every 10th unit of population is chosen. What is this type of sampling technique?**

a) Systematic random sampling

b) Systematic sampling

c) Simple random sampling

d) Cluster sampling

Correct Answer - A

Ans. a. Systematic random sampling

This is type of systematic random sampling.

## 112. Which of the following is not true about expected date of delivery (EDD)?

a) Less than 5% deliver on the expected date of delivery

b) 50% deliver within one week

c) 80% deliver within two weeks

d) Standard deviation around EDD is 3 weeks

Correct Answer - D

Ans. d. Standard deviation around EDD is 3 weeks

### **Expected Date of Delivery (EDD)**

- Only 4% of births take place on EDD
- About 50% deliver within 1 week on either side of EDD
- 80% deliver about 2 weeks before to 1 week after EDD
- Standard deviation is of 13 days
- (90% of babies will be born within three weeks of their EDD, and 21% will be born within three days of it)

**113. All of the following are true about dengue except:**

a) Lamivudine is the drug of choice

b) Malnutrition is protective

c) *Aedes aegypti* acts as vector

d) Caused by Flavivirus

Correct Answer - A

Ans. a. Lamivudine is the drug of choice

## 114. Who is the chairman of district blindness control society?

a) District collector

b) Programme manager

c) District health officer

d) District eye surgeon

Correct Answer - A

Ans. a. District collector

'District Blindness Control Society has been established under the chairmanship of District Collector/Deputy Commissioner.

### **District Blindness Control**

Chairman	District Collector
Vice-Chairman	Deputy Director of Health Services
Member	Chief Ophthalmic Surgeon and
Secretary	District Programme Manager
Technical Adviser	District Ophthalmic Surgeon

## 115. Which of the following is not a type of vaccine derived polio virus?

a) iVDPV

b) cVDPV

c) aVDPVd

d) mVDPV

Correct Answer - D

Ans. d. mVDPV

75. m-VDPV is not a type of vaccine-derived polio virus.

### **Vaccine derived polio virus (VDPV)**

#### **Types of VDPV:**

- c-VDPV: Person-to-person transmission in community
- i-VDPV: Isolates from immunodeficient persons
- a-VDPV: Ambiguous from health person or sewage isolates

#### **Diagnosis:**

- VDPV is diagnosed by Real time Reverse transcription-PCR nucleic acid amplification

#### **Key risk factors for cVDPV emergence**

Development of immunity gaps (due to low OPV coverage)

Low routine immunization coverage with trivalent OPV

Prior elimination of WPV types

Insensitive AFP surveillance

**116. A study has been done to establish the relationship between smoking and lung cancer. It was found that the association was more in people who exercise less and less in people exercise more. In this situation, exercise is a**

a) Bias

b) Confounding

c) Effect modifier

d) Collinear factor

Correct Answer - C

Ans. c. Effect modifier

Effect modification of smoking on lung cancer is occurring due to exercise, i.e. Exercise is the effect modifier For factor to be a confounder, it should be randomly associated with both the risk factor and the outcome.

'Effect modification: A variable that differentially (positively and negatively) modifies the observed effect of a risk factor on disease status. Different groups have different risk estimates when effect modification is present.

**117. Which of the following is used to compare two data sets taken on two different scales of measurement?**

a) Variance

b) Coefficient of variation

c) Standard error of mean

d) Standard deviation

Correct Answer - B  
Ans. b. Coefficient of variation

**118. According to ICDS, supplements given to a pregnant woman are:**

a) 200 Kcal + 10 gms protein

b) 250 Kcal + 12 gms protein

c) 300 Kcal + 15 gms protein

d) None of these

Correct Answer - D

Answer d (None of these)

**Supplementary Nutrition According to ICDS Scheme**

Children 6-72 months of age	500 calories + 12-15 gms of protein
-----------------------------	--

Severely malnourished children of 6-72 months of age	800 calories + 20-25 gms protein
--	-------------------------------------

Pregnant and nursing woman	600 calories + 18-20 gms of protein
----------------------------	--

## 119. . Which of the following is not true about inertization?

a) Relatively inexpensiv

b) It is done for pharmaceutical waste

c) It involves mixing the waste with cement before disposal

d) It causes water pollution

Correct Answer - D

Ans. d. It causes water pollution

The process of `inertization' involves mixing waste with cement and other substances before disposal, in order to minimize the risk of toxic substances contained in the wastes migrating into the surface water or ground water. It doesn't cause water pollution.

### **Inertization**

- The process of `inertization' involves mixing waste with cement and other substances before disposal, in order to minimize the risk of toxic substances contained in the wastes migrating into the surface water or ground water.
- A typical proportion of the mixture is: 65 per cent pharmaceutical waste, 15 per cent lime, 15 per cent cement and 5 per cent water.
- A homogeneous mass is formed and cubes or pellets are produced on site and then transported to suitable storage sites

Advantage	Disadvantage
Relatively inexpensive	Not applicable to infectious waste

**120. Chendler endex is an important tool in epidemiology. Which of the following is its least likely use?**

a) Determining case severity and prognosis

b) Impact of control programme

c) Endemicity

d) Load of infection in the community

Correct Answer - A

Ans. a. Determining case severity and prognosis

- 'Chandler's index is still used in epidemiological studies of hookworm disease. By this index, worm loads in different population groups can be compared, and also the degree of reduction of egg output after mass treatment.

**Endemic Index for Hookworm**

- Morbidity and mortality from hookworm infection depends much on the worm load.
- Chandler worked out an index on the basis of average number of eggs per gram of feces for the entire community

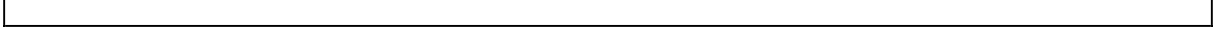
**Chandler's Index**

Below 200 Hookworm infection is not of much significance

200 - 250 May be regarded as potential danger

250 - 300 Minor public health problem

Above 300 Important public health problem



**121. . The prospectively evaluated, double-blinded, randomized clinical trial represents the 'gold-standard' for providing evidence for therapeutic decision making. This was first proposed by the father of evidence-based medicine:**

a) Tolstoy

b) Sackett

c) Hippocrates

d) da Vinci

Correct Answer - B

Ans. b. Sackett

"David Lawrence Sackett is a Canadian medical doctor and a pioneer in evidence-based medicine. He founded the first department of clinical epidemiology in Canada at McMaster University, and the Oxford Centre for Evidence-Based Medicine. He is well known for his textbooks Clinical Epidemiology and Evidence-Based Medicine."

Father of modern  
medicine

Hippocrates<sup>Q</sup>

Father of Indian  
medicine

Charaka<sup>Q</sup>

Father of modern  
surgery

Ambroise Pare<sup>Q</sup>

Father of Indian surgery

Father of Indian surgery	Shushruta <sup>Q</sup>
Father of epidemiology	John Snow <sup>Q</sup>
Father of bacteriology	Louis Pasteur <sup>Q</sup>
Father of modern anatomy	Vesalius <sup>Q</sup>
Father of physiology	Claude Bernard <sup>Q</sup>
Father of antiseptics	Joseph Lister <sup>Q</sup>

**122. True statements regarding the calculation of HDI are all of the following except**

a) In gross enrolment, only secondary education is considered, not primary education

b)  $1/3^{\text{rd}}$  weightage is given to adult literacy

c)  $2/3^{\text{rd}}$  weightage is given to gross enrolmen

d) Country's achievement is computed on the basis of adult literacy

Correct Answer - D

Ans. d. Country's achievement is computed on the basis of adult literacy

The knowledge and education index of a country is computed on the basis of adult literacy rate and combined gross enrollment ratio."

**123. Chemoprophylaxis is indicated for all of the following except:**

a) Cholera

b) Measles

c) Meningococcal meningitis

d) Conjunctivitis

Correct Answer - B

Ans. b. Measles

**124. All of the following statements regarding INH chemoprophylaxis are correct except**

a) It is cheap

b) It is not feasible to apply on a large scale

c) It has risk of drug-induced hepatitis

d) It is not highly clinically effective

Correct Answer - A

Ans. a. It is cheap

It is not feasible to apply on a large scale: A WHO expert committee in 1982 concluded that chemoprophylaxis with INH can prevent the development of tuberculosis in infected individuals, but the impact on the community will be minimal, because it cannot be applied on a mass scale, even in technically advanced countries.

It carries a small risk of drug-induced hepatitis.

It is not highly clinically effective: It is not strikingly effective. For the majority of tuberculin reactors, the risk of developing tuberculosis is small and the potential benefit offered by chemoprophylaxis is not great enough to justify its use

**INH chemoprophylaxis**

- It is a costly exercise.
- It is not strikingly effective. For the majority of tuberculin reactors, the risk of developing tuberculosis is small and the potential benefit offered by chemoprophylaxis is not great enough to justify its use.
- It carries a small risk of drug-induced hepatitis
- Chemoprophylaxis, is therefore, not a worthwhile exercise of tuberculosis control, especially in developing countries such as India

where resources are limited and a large segment of the population is infected.

- A WHO expert committee in 1982 concluded that chemoprophylaxis with INH can prevent the development of tuberculosis in infected individuals, but the impact on the community will be minimal, because it cannot be applied on a mass scale, even in technically advanced countries.
- An earlier WHO expert committee on tuberculosis emphasized that preventive treatment is irrational even for special high-risk groups<sup>e</sup>, unless case-finding and treatment programme for infectious tuberculosis is widespread and well-organized and achieves a high rate of cure.
- In this context, BCG gets priority over chemoprophylaxis.

## 125. Positive predictive value is a function of sensitivity, specificity and

a) Absolute risk

b) Relative risk

c) Incidence

d) Prevalence

Correct Answer - D

Ans. d. Prevalence

The predictive value of a positive result falls as the disease prevalence declines.

### **Positive Predictive Value**

- In addition to sensitivity and specificity, the performance of a screening test is measured by its 'predictive value', which reflects the diagnostic power of the test.
- The predictive accuracy depends upon sensitivity, specificity and disease prevalence.
- The predictive value of a positive test indicates the probability that a patient with a positive test result, has, in fact, the disease in question.
- The more prevalent a disease in the given population, the more accurate will be the predictive value of a positive screening test.
- The predictive value of a positive result falls as the disease prevalence declines

**126. All of the following are correct regarding the period of isolation in the following diseases except:**

a) Chicken pox: 6 days after the onset of rash

b) Measles: 3 days after the onset of rash

c) German measles: 7 days after the onset of rash

d) Herpes zoster: 6 days after the onset of rash

Correct Answer - C

Ans. c. German measles: 7 days after the onset of rash

Chicken pox a Until all lesions crust

Usually about 6 days after onset of rash

Measles - From the onset of catarrhal stage through 3rd day of rash

German measles - None, except that women in the first trimester, or sexually active, non-immune women in child bearing years not using contraceptive methods should not be exposed

Herpes zoster - 6 days after onset of rash

## 127. Which of the following regarding oral polio vaccine (OPV) is not true?

a) Useful in epidemics

b) Excretion of virus in stools may cause disease to the unimmunized

c) Rapid antibody response

d) Protective even in the presence of maternal antibodies

Correct Answer - B

Ans. b. Excretion of virus in stools may cause disease to the unimmunized

### **Oral Polio Vaccine (OPV):**

- The OPV progeny excreted in the feces and secondary spread occurs to household contacts and susceptible contacts in the community.
- This property of OPV has been exploited in controlling epidemics of polio by administering the vaccine simultaneously in a short period to all susceptibles in a community.
- Nevertheless, several studies show that among breastfed infants, who are fed OPV in the first three days of life, 20-40 percent develop serum antibodies and 30-60 percent excrete vaccine virus.
- Colostrum produced in the first three days after child-birth contains secretory IgA antibody which might interfere with the production of immune response to OPV
- "The OPV progeny excreted in the feces and secondary spread occurs to household contacts and susceptible contacts in the community. Non-immunized persons may therefore be immunized. Thus, widespread 'herd immunity' results, even if only approximately 66 percent of the community is immunized. This property of OPV

has been exploited in controlling epidemics of polio by administering the vaccine simultaneously in a short period to all susceptibles in a community. This procedure virtually eliminates the wild polio strains in the community and replaces *them with attenuated strains*.

## 128. HIV sentinel surveillance provides data:

- a) To monitor disease trends
- b) To identify high risk population
- c) To estimate disease incidence
- d) To assess the quality of related services

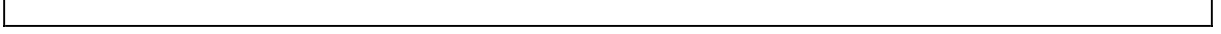
Correct Answer - A

Ans. a. To monitor disease trends

Although the HIV sentinel surveillance data has been primarily used for monitoring the trends, i.e. to assess how rapidly HIV infection increases or decreases over the time in different groups and areas, it can also provide an estimate of the total burden of HIV infection in the country

### HIV Sentinel Surveillance

- After the establishment of the fact that the HIV infection is present in wide geographic areas, the objective of the sentinel surveillance was redefined to monitor the trends of HIV infection<sup>Q</sup>
- The objective of the surveillance is best achieved by annual cross-sectional survey of the risk group in the same place over a few years by unlinked anonymous serological testing procedures by two ERS (i.e. when HIV testing is carried out without identification of name of samples collected for other purposes such as VDRL in STD clinics.) The number of samples to be screened must represent the risk group under study and the sample size is determined accordingly.
- Although the HIV sentinel surveillance data has been primarily used for monitoring the trends, i.e. to assess how rapidly HIV infection increases or decreases over the time in different groups and areas, it can also provide an estimate of the total burden of HIV infection in the country<sup>Q</sup>



**129. Evidence of decreased risk of cardiovascular disease is associated with all of the following except:**

a) Vitamin E supplementation

b) Low to moderate daily alcohol consumption

c) Regular physical activity

d) Potassium

Correct Answer - A

Ans. a. Vitamin E supplementation

Evidence of decreased risk of cardiovascular disease is not associated with vitamin E supplementation

**130. The provisions under Janani Shisna Suraksha Karvakram (.1SSK) include all of the following except:**

a) Free food to the mother in the hospital

b) Cash incentive for institutional deliveries

c) Free transport to the mother and baby to/from hospital

d) Free treatment of the neonate and infant in all public health facilities

Correct Answer - B

Ans. b. Cash incentive for institutional deliveries

**Janani-Shishu Suraksha Karyakram (JSSK):**

- The initiative entitles all pregnant women delivering in public health institutions to absolutely free and no expense to delivery, including cesarean section.
- The entitlements include free drugs and consumables, free diet up to 3 days during normal delivery and up to 7 days for cesarean section, free diagnostics, and free blood wherever required.
- This initiative also provides for free transport from home to institution, between facilities in case of referral and drop back home.
- Similar entitlements have been put in place for all sick newborns accessing public health institutions for treatment till 30 days after birth.
- This has been expanded to cover sick infants
- The scheme aims to eliminate out of pocket expenses incurred by the pregnant women and sick new borns while accessing services at Government health facilities

**131. Calculate the neonatal mortality rate for a population according to the data of 2012. Number of neonatal deaths- 450, number of stillbirths-212, total number of live births-12,450.**

a) 36

b) 15

c) 90

d) 56

Correct Answer - A

Ans. a. 36

Neonatal mortality rate=Number of deaths of children under 28 years of age in a year (neonatal deaths) x 1000/ Total live births in the same year

$450 \times 1000 / 12450 = 36$  per 1000 live births

**132. Infant mortality rate includes all of the following except**

a) Early neonatal deaths

b) Late neonatal deaths

c) Post neonatal deaths

d) Stillbirths

Correct Answer - D

Ans. d. Stillbirths

Infant mortality rate doesn't include stillbirths.

"Infant mortality rate includes early, late and post-neonatal deaths (from birth to 1 year of life)

**133. A girl is has white hair. 40% of her classmates are also suffering from the same problem. None of the other people from the same village have white hair. Her brother who is staying with an aunt in the neighbouring village is also normal and does not have white hair. Which of the following explains the probable cause of her white hair?**

a) Environmental

b) Genetic

c) Nutritional

d) Infection

Correct Answer - A

Ans. a. Environmental

A girl and 40% of her classmates are suffering from white hair. Her brother who is staying with an aunt in the neighboring village is normal and does not have white hair. In the given question, as the girl and many of her classmates (from a single geographical area, in this case, the school) have developed grey hair, the most likely cause would be environmental.

Similarly, as many other children from the same school have white hair, the cause is also unlikely to be nutritional.

As the girl's brother living in a different village does not have white hair, the cause of the white hair is unlikely to be genetic

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### 134. Severe Acute Malnutrition (SAM) in India is defined as:

a) Very low weight for age (below -3 Z scores of the mean WHO standards for growth), by visible severe wasting, or presence of nutritional edema

b) Very low weight for age (below -3 Z scores of the mean WHO standards for growth) only

c) Visible severe wasting, or presence of nutritional edema

d) Very low weight for height (below -3 Z scores of the mean WHO standards for growth), by visible severe wasting, or presence of nutritional edema

Correct Answer - D

Ans. d. Very low weight for height (below-3 Z scores of the *mean* WHO standards for growth), by visible severe wasting, or presence of nutritional edema

**135. The most sensitive indicator of environmental iodine deficiency is**

a) Serum T4 levels

b) Serum T3 levels

c) Urine iodine excretion

d) Neonatal hypothyroidism

Correct Answer - D

Ans. d. Neonatal

The most sensitive indicator of environmental iodine deficiency is neonatal hypothyroidism.

"Neonatal hypothyroidism is a sensitive pointer to environmental iodine deficiency and can thus be an effective indicator for monitoring the impact of a programme. Neonatal hypothyroidism has been found to be a sensitive indicator of environmental iodine deficiency."

**136. All of the following can cause epidemic in post-disaster period except**

a) Leishmaniasis

b) Leptospirosis

c) Rickettsiosis

d) Acute respiratory infections

Correct Answer - A

Ans. a. Leishmaniasis

**Post-disaster Period**

- An outbreak of gastroenteritis is the most commonly reported disease in the post-disaster period. Increased incidence of acute respiratory infections is also common in the displaced population.
- Vector-borne diseases will not appear immediately but may take several weeks to reach epidemic levels. Displacement of domestic and wild animals increases the risk of transmission of zoonoses. Some of these animals may be reservoirs of infections such as leptospirosis, rickettsiosis, etc.
- Rickettsial diseases are also seen post-disaster especially in refugee camps.
- Wild animals are reservoirs of infections, which can be fatal such as equine encephalitis, rabies, and infections still unknown to humans.

**137. The haemoglobin levels of pregnant females in a community was found to have a mean of 10.6 g/dl, and a standard deviation of 2 g/dL. What is the minimum haemoglobin level below which 5% of the pregnant females will have their haemoglobin levels?**

a) 7.32

b) 8.64

c) 6.68

d) 8.96

Correct Answer - C  
Ans. c. 6.68

### 138. Universal Health coverage in India was recommended by which of the following committees?

a) Multipurpose worker committee

b) Health development and planning committee

c) High level expert committee

d) Medical education committee

Correct Answer - C

Ans. c. High level expert committee

The terms of reference (ToRs) are as follows:

- . Develop a blue print for human resources for health in India.
- . Rework the physical and financial norms needed to ensure quality universal reach and access of health care services
- Suggest critical management reforms in order to improve efficiency, effectiveness and accountability of the health delivery system.
- . Identify pathways for constructive participation of communities and the private for-profit and not-for-profit sectors in the delivery of health care
- . Develop systems, which will ensure access to essential drugs, vaccines and medical technology by enhancing their availability and reducing cost to the Indian consumer.
- . Develop a framework for health financing and financial protection that offers universal access to health services.
- . It was also decided to develop a seventh chapter addressing the Social Determinants of Health, as this was seen as an important overlapping element to be covered by, and beyond, all ToRs



**139. All of the following provisions are included in the primary health care according to the Alma Ata declaration except**

a) Adequate supply of safe drinking water

b) Provision of food supply

c) Provision of free medicines

d) Basic sanitation

Correct Answer - C

Ans. c. Provision of free medicines

**Primary Health Care**

- The Alma Ata Conference has defined primary health care as — an essential health care made universally accessible to individuals and acceptable to them, through their full participation and at a cost the community and country can
- The Alma — Ata Declaration has outlined 8 essential components of primary health care
- Education concerning prevailing health problems and the methods of preventing and controlling them<sup>Q</sup>
- Promotion of food supply and proper nutrition<sup>Q</sup>
- An adequate supply of safe water and basic sanitation<sup>Q</sup>
- Maternal and child health care, including family planning<sup>Q</sup>
- Immunization against major infectious diseases<sup>Q</sup>
- Prevention and control of locally endemic diseases<sup>Q</sup>
- Appropriate treatment of common diseases and injuries<sup>Q</sup>
- Provision of essential drugs<sup>Q</sup>

**The principles of primary health care include**

- Equitable distribution<sup>Q</sup>
- Community participation<sup>Q</sup>
- Intersectoral co-ordination<sup>Q</sup>
- Appropriate technology<sup>Q</sup>

## 140. Matching is a method to eliminate confounding bias. It is used in

a) Case-control study

b) Cohort study

c) Experimental study

d) Cross-sectional study

Correct Answer - A

Ans. is 'a' i.e., Case-control study

- Matching is most useful in case-control studies (though it can also be used in cohort studies, the benefit is not assured if exposure is not randomized).

### **Method Used to Control Confounding**

Method	Utility to control confounding
Randomization	Most ideal method
Restriction	Limiting the study to people who have particular characteristics
Matching	Mostly useful in case-control studies
Stratification	Useful for larger studies
Statistical modeling	When many confounding variables exist simultaneously

**141. The prevalence of disease in a population is expected to be 50%. An investigator is interested in the range of 45 to 55% with 95% confidence. The minimum sample size required for the study is:**

a) 100

b) 200

c) 300

d) 400

Correct Answer - D

Answer- D (400)

- In this question, use Standard Error of proportions.
- The 95% confidence limits for a proportion are  $p \pm 1.96 \text{ s.e.p}$ , where s.e.p is the standard error of a proportion.
- $p = \text{sample proportion} = \text{proportion of diseased persons} = 0.5$   $q = 1 - p = 0.5$   $\text{s.e.p} = \sqrt{pq/n}$
- Now here, the range of proportions with 95% confidence is mentioned as? 45-55%
- Hence,  $2 \text{ s.e.p} = 0.55 - 0.50 = 0.05$   $\text{s.e.p} = 0.025$   
 $0.025 = \sqrt{pq/n}$   
 $n = 400$   
Thus, the sample size required will be 400.

## 142. Meningococcal polyvalent vaccine is routinely recommended to:

- a) Adolescents young males
- b) All healthy children between 5-7 years of age
- c) More than 50 years of age diabetic patients on regular insulin
- d) 40 years old paramedical staff working in laboratory

Correct Answer - B

Ans. b. All healthy children between 5-7 years of age

All healthy children between 5-7 years of age (Ref: Park 23/e pt 66, 22/e pl 57)

'Quadrivalent (polyvalent) vaccines are administered as a single dose to individuals aged > 2 years.'- Park 22/e pl57)

**143. The prevalence of Candida glabrata infection is found to be 80% in a population of 100. If the test is repeated for 95% confidence levels, then what will be the range of prevalence for the candida glabrata infection?**

a) 4-100

b) 70-90

c) 72-88

d) 65-95

Correct Answer - C  
Answer- C (72-88)

**144. In a district hospital in India, an ophthalmologist is expected to perform which of the following surgeries most commonly?**

a) Phacoemulsification

b) Trabeculectomy

c) Dacryocystectomy

d) External tarsal rotation (tarsal resection)

Correct Answer - A

Ans. A. Phacoemulsification

- Phacoemulsification (Ref: Park 23/e p439, 22/e p406; Khurana 5/e p486)
- Under NPCB, training of ophthalmologists is done on multiple topics.
- Out of which the universal training, which is done for ophthalmologists even at sub-district hospital and district hospital level is:
- ECCE/IOLimplantation
- SICS (Small Incision Cataract Surgery)
- Phacoemulsification

**145. According to WHO definition, what is the criteria for considering a high endemic area for meningococcal meningitis?**

a) <2 per 1,00,000 population

b) 2-10 per 1,00,000 population

c) >10 per 1,00,000 population

d) >100 per 1,00,000 population

Correct Answer - C

Ans. c. >10 per 1,00,000 population (Ref: Park 23/e p165, 22/e p156)

- WHO defines highly endemic areas where incidence of meningococcal meningitis as number of cases per 1,00,000 population is >10 cases.

**146. The recommended oral dose of vitamin A in pregnant females is:**

a) 50,000 U

b) 1,00,000 U

c) 2,00,000 U

d) 3,00,000 U

Correct Answer - C

Ans. c. 2,00,000

- There was a previous recommendation by WHO on giving 2 lacs IU of Vitamin A to pregnant women immediately after delivery, which was withdrawn in 2011.'

**147. Which of the following statements regarding deworming under National Child Health Programme is not correct?**

a) It is done for all pre-school and school going children

b) Mebendazole 100 mg is used for >1 year old children

c) Albendazole 400 mg is used for >2 year old children

d) It is linked with vitamin A supplementation programme

Correct Answer - B

Ans. b. Mebendazole 100 mg is used for >1 year old children

One tablet (500 mg) of mebendazole is given for 1-2 years of age.

**148. The estimation of prevalence of blindness by blind school survey in place of population-based survey would lead to:**

a) Over-estimate

b) Under-estimate

c) There would be no difference

d) Both of the methods are not to be used for this

Correct Answer - C

Ans. c. There would be no difference

- According to NAB (National Association for Blind), India Legal blindness is defined as visual acuity of not greater than 20/200 in the better eye with best correction or a visual field of less than 20 degrees.

**149. Which of the following statements regarding the National Programme for Non-communicable diseases-Cancer, Diabetes, Cardiovascular diseases (CVD) and stroke (NPCDCS) is true?**

a) The plan is to implement the programme in 10 districts across the 5 states during 2010-2012

b) The diagnosis or treatment of non-communicable diseases to be carried out at the subcentre level

c) Coronary care unit and cancer care facility to be established at the district level hospital

d) All the components of the programme to be addressed separately- cancer, diabetes, CVD and stroke

Correct Answer - C

Ans. c. Coronary care unit and cancer care facility to be established at the district level hospital (Ref: NPCDCS Operational Guidelines, DGHS, GOI, Page 6)

The NPCDCS program has two components viz. (i) Cancer and (ii) Diabetes, CVDs and Stroke.

## 150. Regarding Evidence Based Medicine (EBM), all of the following are true, except:

a) **EBM depends on clinical model and decision analysis to base its recommendations**

b) EBM objectively evaluates the quality of clinical research by critical assessing techniques reported by researchers in publications

c) The strongest argument for the therapeutic intervention is systemic review or meta-analysis of triple blinded, randomized, placebo-controlled clinical trials with allocation concealment and complete follow-up involving a homogenous population of patients or medical disorders

d) The weakest argument is the opinion of experts or medical boards

Correct Answer - A

Answer: a. EBM depends on clinical model and decision analysis to base its recommendations

- It aims to apply the best available evidence gained from the scientific method to medical decision-making
- and it seeks to assess the quality for evidence of the risks and benefits of treatments.
- EBM is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients

**151. Which of the following committees has recommended a 3-year bachelor degree in medical education for rural health service?**

a) High level expert group of universal health program for india

b) Central bureau of health investigation

c) Srivastava committee

d) Sundar committee

Correct Answer - A

Answer- A. High level expert group of universal health program for india

- Concept of 3 years bachelor para-medical course for rural health service was proposed by Ministry of health and family welfare and received backing of Planning Commission of India's High level expert group of universal health program.

## 152. Screening is not useful in which carcinoma

a) Carcinoma prostate

b) Carcinoma colon

c) Carcinoma breast

d) Testicular tumor

Correct Answer - D

**Ans: D. Testicular tumor**

- Screening is not useful in testicular tumors.
- **Screening Recommendations for Asymptomatic Subjects:**
  - Breast:**
    - **Self-examination.**
    - Clinical examination.
    - Mammography.
    - MRI.
  - Cervical:**
    - Pap test (cytology).
    - HPV test
  - Colorectal:**
    - Sigmoidoscopy
    - Fecal occult blood testing (FOBT)
    - Colonoscopy
    - Fecal DNA testing
    - Fecal immunochemical testing (FIT)
    - CT colonography
  - Lung:**
    - Low-dose computed tomography
    - (CT) scan

**Ovarian CA:**

- CA marker-125
- Transvaginal ultrasound

**Prostate:**

- Prostate-specific antigen (PSA)
- Digital rectal examination (DRE)

**Skin:**

- Complete skin examination

**153. In a group of 100 people, the average GFR is 85 ml/ min with a standard deviation of 25. What is the range for 90% confidence interval?**

a) 81-89

b) 80-90

c) 75-95

d) 70-100

Correct Answer - A

**Ans: A. 81-89**

(Ref: Park 24/e p888, 22/e p793; Essentials of Biostatistics 2/e p170)

- **Range for 90% confidence interval in the given question is 81-89.**

**Confidence intervals:**

- Lower limit & upper limit estimates for statistic given by:
- Lower Limit: statistic – C x SE (statistic)
- Upper Limit: statistic + C x SE.

**Confidence coefficient:**

- C = Confidence coefficient = 1.65 for 90% confidence interval
- C= 1.96 for 95% confidence interval
- C= 2.58 for 99% confidence interval
- C = 3.29 for 99.9% confidence interval

**Now for 90% confidence interval:**

- Upper limit =  $85 + (1.65 \times 2.5) = 85 + 4 = 89.$
- Lower limit =  $85 - (1.65 \times 2.5) = 85 - 4 = 81.$
- **Hence, for 90% confidence interval will 81-89.**

**154. "Nikshay" is a newly launched central government software. It is used for tracking:**

a) Tuberculosis

b) High-risk pregnancies

c) High-risk newborns

d) Malaria

Correct Answer - A

**Ans: A. Tuberculosis**

**"Nikshay":**

- Newly launched central government software.
- Web based reporting for monitoring RNTEP & used for tracking tuberculosis.
- Made a notable achievement initiated in 2012.
- Enabled capture & transfer of individual patient data from remotest health institutions of country.

**155. A 10-year boy with dog bite unprovoked comes to you. Appropriate action is:**

a) Give cell culture derived vaccine

b) Withhold vaccine and observe dog for 10 days

c) Kill dog and send brain for biopsy

d) No further action is necessary

Correct Answer - A

**Ans: A. Give cell culture derived vaccine**

*(Ref Park's 24/e p297, 23/e p279, 22/e p253)*

- Most appropriate action - Give post-exposure prophylaxis with cell-culture derived vaccine.

**Post-Exposure Prophylaxis:**

- **Aim:** To neutralize inoculated virus before entry to nervous system.

**Prevention:**

- Effective & safe in preventing rabies:
- Concentrated & purified cell-culture vaccine (CCV).
- Embryonated egg-based vaccine (EEV).

**Uses:**

- Intended for pre-exposure & post-exposure prophylaxis.

**Discontinuation point:**

- Discontinued if suspected animal is proved by appropriate examination is rabies-free.
- Domestic dogs, cats or ferrets remain healthy throughout 10-days observation period starting from date of bite.

**Categories of contact with Post-exposure prophylaxis suspected Rabid animal measures**

- I. Touching or feeding animals None
- Licks on intact skin

II. Nibbling of uncovered skin  
Minor scratches or abrasions  
without bleeding

Immediate vaccination & local  
treatment of wound.

III. Single or multiple transdermal  
bites or scratches  
Licks on broken skin  
Contamination of mucous  
membrane with saliva from licks  
Contact with bats

Immediate vaccination and  
administration of rabies  
immunoglobulin and local  
treatment of the wound.

## 156. Haddon matrix is related to:

a) Injury prevention

b) Communicable diseases

c) Maternal and child mortality

d) Hypertensive disorders

Correct Answer - B

**Ans: B. Communicable diseases**

**Haddon matrix:**

- Related to injury prevention.
- Most commonly used paradigm in injury prevention field.

**157. In a study, two groups of newborns are checked for their weights based on whether their mothers received food supplements or not. The appropriate test which can be used for comparing the data is:**

a) Chi square test

b) Paired T-test

c) Student's T-test

d) Fischer exact test

Correct Answer - C

**Ans: C. Student's T-test**

(Ref Park 22/e p795; Biostatistics by Mahajan 7/e p134)

- Here, comparing a parametric quantitative variable (weight) in two unrelated group of people.
- Hence, "Student's t-test" used.

**Student t-test:**

- Used when outcome variable is normally distributed in population (for quantitative data).
- Ex: BP, blood glucose.

**158. A researcher wants to (to a study of blood levels of lipids among people who smoke and those who do not. But he is now concerned that the smokers might differ from non-smokers in their diet, exercise, etc as well. This concern is known as:**

a) Recall bias

b) Information bias

c) Selection bias

d) Interviewer bias

Correct Answer - C

**Ans: C. Selection bias**

(Ref Park 24/e p78, 88, 23/e p73, 22/e p71;  
en.wikipedia.org/wiki/Bias\_(statistics); <http://sphweb.hume.hu.echdolt/mph-modules>)

**Selection bias:**

- Groups to be compared are differentially susceptible to outcome of interest, even before experimental maneuver is performed.
- Also referred as "Susceptibility bias".
- In the given question, researcher is concerned that the smokers might differ from non-smokers in their diet, exercise, etc.
- Hence, this concern is known as selection bias.

## 159. Regarding Japanese encephalitis vaccine, what is not true?

- a) Not given for infants less than 6 months
- b) Two primary doses given to children in the one to three year age group
- c) Booster doses are given after 1 year and repeated every 3 years
- d) In endemic areas vaccination is given to cover children between one to nine years age group.

Correct Answer - D

**Ans: D.** In endemic areas vaccination is given to cover children between one to nine years age group.

(Ref Park 24/e p303, p261; Indian Journal of Pediatrics,. Vol. 51, October 15, 2015 p785).

### **Japanese Encephalitis Vaccine:**

- In endemic areas, vaccine is given to cover children between 1-15 years (Not 1 to 9 yrs).
- 2 primary doses 4 weeks apart, booster after 1 year and 3 years until the age of 10-15 years.
- Booster after 1 year and then repeated every 3 years.
- Minimum age: According to US-FDA-2 months.

## 160. Human Developmental Index is a composite measure, which uses?

a) Life expectancy at age one, literacy and infant mortality

b) Freedom, spice and right to express oneself

c) Life expectancy at birth, infant mortality and quality of life

d) Life expectancy at birth, knowledge and decent standard of living.

Correct Answer - D

**Ans: D. Life expectancy at birth, knowledge and decent standard of living.**

(Ref Park 24/e p17, 23/e p17)

**Human Development Index (HDI):**

- Published on 4 November 2010.
- Updated on 10 June 2011.
- Composite statistic of life expectancy, education & income indices.
- Used to rank countries into 4 tiers of human development.

**2010 HDI Report:**

**Combines three dimensions:**

- A long & healthy life: Life expectancy at birth.
- Education index: Mean years of schooling and Expected years of schooling.
- A decent standard of living: GNI per capita (PPP US\$).

**161. Data about recent trends of immunization in the community can be found by:**

a) Sample registration system

b) District level health survey

c) Rural survey

d) Census data

Correct Answer - B

**Ans: B. District level health survey**

(Ref Park's 22/e p786)

**District Level Health Survey - Objectives:**

- Coverage of ante-natal, natal and post-natal checkups and child immunization.
- Proportion of institutional/safe deliveries.
- JSY beneficiaries.
- Contraceptive prevalence rates.
- Unmet need for contraceptives - Spacing & limiting.
- Awareness about RTI/ STI and HIV/AIDS.
- Ministry of Health and Family Welfare (MOHFW), Government of India, has included the Clinical, Anthropometric and Biochemical (CAB) component for data collection in the District Level Household Survey (DLHS)-4.

## 162. Food safety and standards authority of India comes under which ministry:

a) Rural statistics

b) Ministry of health and family and welfare

c) Ministry of consumer affairs food and public distribution

d) Ministry of agriculture

Correct Answer - B

**Ans: B. Ministry of health and family and welfare**

(Ref Park's 24/e p697, 23/e p660, 22/e p613; wwwfssai.gov.in)

**The Food Safety and standards Authority of India (FSSAI):**

- Established under Food Safety and Standards Act, 2006.
- **Administrative ministry for FSSAI implementation:**
- Ministry of Health and Family Welfare, Government of India.
- **Chairperson:**
- In rank of secretary to Government of India.
- **Uses:**
- Created for laying down science-based standards for articles of food.
- Regulate manufacture, storage, distribution, sale & import to ensure availability of safe and wholesome food for human consumption.

**163. In a survey of sleep apnea scores among 10 people, the highest sample of 58 was entered by mistake as 85. This will affect the result as:**

a) Increased mean, decreased median

b) Increased mean, increased median

c) Increased mean. no change in median

d) No change in mean, increased median.

Correct Answer - C

**Ans: C. Increased mean. no change in median**

(Ref. Park 24/e p885, 23/e p847, 22/e p786)

- Value of median is not affected by abnormal very high or very low value.
- Mean is unduly influenced by abnormal values (either very high or very low) in distribution.

**164. The blood pressure data of 200 persons were collected. The first quartile BP of the data was 94 mm Hg and third quartile was 110 mm. How many patients have blood pressures between the 3rd and 4th quartile?**

a) 25

b) 50

c) 100

d) 200

Correct Answer - B

**Ans: B. 50**

**Quartile:**

- Type of quantile.
- In descriptive statistics - Quartiles are ranked set of data values.
- Are 3 points dividing data set into four equal groups.
- Each group comprising quarter of data.

**1<sup>st</sup>quartile (Q1):**

- 25' percentile (splits off lowest 25% of data from highest 75%).

**2<sup>nd</sup>quartile (Q2):**

- 50' percentile (cuts data set in half).

**3<sup>rd</sup>quartile (Q3):**

- 75" percentile (splits off highest 25% of data from lowest 75%).

**Interquartile range (IQR):**

- Difference between upper & lower quartiles.
- $IQR = Q3 - Q1$ .

**Per question:**

- Between every two quartiles one/ fourth of total number of patients present.
- I.e.  $200/4 = 50$  patients.

**165. Window period is defined as the time taken from:**

a) Entry of pathogen to appearance of first clinical symptoms

b) Exposure to laboratory detection of disease

c) Entry in cell to expulsion of first viral particle

d) Entry to maximum communicability.

Correct Answer - B

**Ans: B. Exposure to laboratory detection of disease**

(Ref• Park 24/e p104-106, 23/e p99, 22/e p95)

**Window period:**

- Defined as time taken from exposure to laboratory detection of disease.
- Time between 1<sup>st</sup> infection & when test can reliably detect infection.

**Uses:**

- In antibody-based testing, window period is dependent on time taken for sero-conversion.

**166. Tuberculin test is a cheap and easily available test. In which of the following situations there is high failure in the interpretation of the test?**

a) High percentage of immunized people

b) HIV cases are less

c) High prevalence of disease

d) Environmental mycobacterium infections are less

Correct Answer - A

**Ans: A. High percentage of immunized people**

(Ref Park 24/e p195-196, 23/e p186)

**High failure of tuberculin test:**

- High percentage of immunized people - Due to higher BCG coverage producing tuberculin hypersensitivity.

**Exaggerated responses:**

- In presence of atypical mycobacteria infection & 'boosting effect' of second tuberculin dose producing larger reaction than 1st.
- Tuberculin test lost its sensitivity as an indicator of true prevalence of infection.

**167. 'There has been a gradual increase in number of non-communicable disease cases as compared to previous years. This trend is called:**

a) Seasonal

b) Cyclical

c) Periodical

d) Secular

Correct Answer - D

**Ans: D. Secular**

**(Ref Parks 24/e p69, 23ie p66, 22/c p63)**

**Secular:**

- Trend of gradual increase in number of non- communicable disease cases as compared to previous years.
- Implies changes in disease occurrence over long time period (several years or decades).
- Maybe progressive increase/decrease in disease occurrence.
- Hence, long-term trend.

**Eg:**

- CHD, lung cancer & DM (non-communicable disease) - Consistent upward trend in developed countries.
- TB, typhoid fever, diphtheria & polio - Declined trend in developed countries.

## 168. Sensitivity measures:

a) True positive

b) True negative

c) False positive

d) False negative

Correct Answer - A

**Ans: A. True positive**

(Ref Park 's 24/e p149, 23/e p125, 22/e p131)

**Sensitivity:**

- Measures true positive cases.
- Sensitivity was introduced as a “statistical index of diagnostic accuracy”.
- Defined as “ability of a test to identify correctly all those who have the disease that is 'true positive'.

**Sensitivity** Proportion of persons with the condition who test positive:  $a / (a + c)$

**Specificity** Proportion of persons without the condition who test negative:  $d / (b + d)$

**169. A latex agglutination test for detection of meningitis was approved. Calculate the sensitivity and specificity of the test based on the data given below:**

	Test Positive	Test Negative
Diseased	27	3
Non-diseased	5	95

a) Sensitivity 90% Specificity 95%

b) Specificity 90% Sensitivity 95%

c) Sensitivity 80% Specificity 90%

d) Sensitivity 75% Specificity 95%

Correct Answer - A

**Ans: A. Sensitivity 90% Specificity 95%**

**Sensitivity:**

- Introduced as a statistical index of diagnostic accuracy.
- Defined as the ability of a test to identify correctly all those who have the disease, that is 'true positive:'

**Specificity:**

- Measures the proportion of negatives that are correctly identified as such, e.g., the percentage of healthy people who are correctly identified as not having the condition, that is true negative.
- Sensitivity = Proportion of persons with the condition who test positive:  $a / (a + c) = 27 / 30 = 90\%$  .
- Specificity = Proportion of persons without the condition who test negative:  $d / (b + d) = 95 / 100 = 95\%$ .

**170. A patient of diabetes and hypertension comes to your clinic. As a doctor, you explain to him the risks of various complications. Which of these is the best tool to demonstrate the complications?**

a) Pie chart

b) Histogram

c) Scatter plot

d) Venn diagram

Correct Answer - D

Ans: D. Venn diagram

(Ref [https://en.itikipedia.org/wiki/Venn\\_diagram](https://en.itikipedia.org/wiki/Venn_diagram))

- A Venn diagram is an easy tool to make people understand overlapping risk factors, complications and comorbidities to a patient in a simple language.

## 171. Which of these is the best study to evaluate effect and outcome?

a) Clinical trial

b) Cohort

c) Case control study

d) Cross sectional study

Correct Answer - A

**Ans: A. Clinical trial**

- Among the given options, clinical trial is the best study to evaluate effect and outcome.

**Randomized control trial (Experimental study or Intervention study):**

- Considered as the ideal design to evaluate the effectiveness and the side-effects of new forms of intervention.

**Cohort Study:**

- A study design where one or more samples (called cohorts) are followed prospectively and subsequent status evaluations with respect to a disease or outcome are conducted to determine which initial participants exposure characteristics (risk factors) are associated with it.

**172. A researcher selected all possible samples from a population and plotted their means on a line graph. This distribution is called as:**

a) Sample distribution

b) Sampling distribution

c) Population distribution

d) Parametric distribution

Correct Answer - B

**Ans: B. Sampling distribution**

(Ref Research Methods For Communication Science James H. Watt;

**Sampling distribution / finite-sample distribution:**

- Probability distribution of a given statistic based on a random sample.
- They allow analytical considerations to be based on the sampling distribution of a statistic, rather than on the joint probability distribution of all the individual sample values.

**173. Some medicine comes with a label of 'store at a cool place only'. At what temperature should these medicines be kept?**

a) 8-15 °C

b) 2-8 °C

c) 0 °C

d) 25-28 °C

Correct Answer - A

**Ans: A. 8-15 °C**

(Ref: Park 22/e p100)

- Some medicines come with label of 'store at a cool place only'.
- These medicines should be kept at 8-15 °C.

**Definitions of Storage Conditions of Drugs as per Ip 6 (Indian Pharmacopoeia 1996)**

<b>Cold</b>	Any temperature not exceeding 8°C and usually between <b>2-8°C</b> . A refrigerator is a cold place in which the temperature is maintained thermostatically between 28°C.
<b>Cool</b>	Any temperature between 8-25°C. An article, for which storage in a cool place is directed may alternately, be stored in a refrigerator unless otherwise specified in the individual monograph.
<b>Room Temperature</b>	The temperature prevailing in a working <b>area</b> .
<b>Warm</b>	Any temperature between <b>30-40°C</b> .
<b>Excessive</b>	

heat	Any temperature <b>above 40°C.</b>
Light resistant containers	A light-resistant container <b>protect the content from the effect of actinic light by virtue of the specific properties of the material</b> of which it is made.
Well closed container	A well-closed container <b>protects the contents from contamination by extraneous liquid &amp; from loss of the article</b> under normal condition of handling, shipment, storage & distribution.
Well closed container	A tightly closed container protects the contents from contamination by extraneous liquid & <b>solids or vapor, from loss or deterioration of the article from effervescence</b> , deliquescent or evaporation under normal condition of handling, shipment, storage & distribution.

**174. The mean systolic blood pressure was measured in a sample population of elderly females and came out to be 125 mm Hg with a standard deviation of 10. 95 percent of people would have blood pressure above:**

a) 105 mm Hg

b) 110 mm Hg

c) 115 mm Hg

d) 140 mm Hg

Correct Answer - B

**Ans: B. 110 mm Hg**

(Ref: Park 24/e p 886)

**175. A drug, which does not cure a disease but decreases its symptoms and increases survival, leads to?**

a) Increased prevalence

b) Increased incidence

c) Decreased prevalence

d) Decreased incidence

Correct Answer - A

**Ans: A. Increased prevalence**

(Ref Park 24/e p66, 23/e p61, 22/e p5)

- A drug, which does not cure a disease but decreases its symptoms and increases survival, means its leads to increased duration of disease and increased prevalence.
- $\text{Prevalence} = \frac{\text{No. of total (old + new) cases of a disease in a year}}{\text{Total population}} \times 100$   
 $\text{Prevalence} = \text{Incidence} \times \text{Mean duration of disease}$

## 176. Which of these is not true about randomization in a clinical trial?

a) Reduces confounding

b) Decreases selection bias

c) Ensures comparability of two groups

d) Increases external validity of the trial

Correct Answer - D

**Ans: D. Increases external validity of the trial**

(Ref Park 24/e p87, 23/e p82, 22/e p79)

- External validity is the validity of generalized (causal) inferences in scientific research, usually based on experiments as experimental validity.
- In other words, it is the extent to which the results of a study can be generalized to other situations and to other people.
- This cannot be ensured by randomization.

## 177. Which of these statements is true about Rashtriya Swasthya Bima Yojana?

a) Cashless benefit on presenting smartcard and fingerprints

b) Valid for up to 4 family members

c) Can be used only in 1 district

d) Treatment only in government hospitals

Correct Answer - A

**Ans: A. Cashless benefit on presenting smartcard and fingerprints**

**Rashtriya Swasthya Bima Yojana (RSBY):**

- Government- run health insurance scheme for the Indian poor.
- It provides fir cashless insurance for hospitalization in public as well as private hospitals.
- Provide health insurance coverage for Below Poverty Line (BPL) families.
- Objective is to provide protection to BPL households from financial liabilities arising out of health shocks that involve hospitalization.

**178. A recently delivered woman with a 15 days old child suffering from cough, sneezing and fever needs help. She has no money for transportation to nearby hospital. Which of the national programme can help this woman?**

a) JSSK

b) Indira Gandhi Yojana<sup>F-IMNCI</sup>

c) F-IMNCI

d) Home-based Care

Correct Answer - A

**Ans: A. JSSK**

(Ref Park 24/e p476, 23/e p456, 22/e p420;

<http://nrhm.gov.in/janani-shishu-suraksha-karyakram.html>)

- Janani Shishu Suraksha Karyakaram (JSSK), the national programme can help this woman.
- **Janani-Shishu Suraksha Karyakram (JSSK)**
- The initiative entitles all pregnant women delivering in public health institutions to absolutely free and no expense to delivery, including cesarean section.
- Includes free drugs and consumables, free diet up to 3 days during normal delivery and up to 7 days for cesarean section, free diagnostics, and free blood wherever required.
- Provides for free transport from home to institution, between facilities in case of referral and drop back home.
- Similar entitlements for all sick newborns & infants accessing public

health institutions for treatment till 30 days after birth.

- Aims to eliminate out of pocket expenses incurred by the pregnant women and sick new borns while accessing services at Government health facilities.

**179. According to the new WHO 2013 malaria treatment guidelines, which of the following statements is true?**

a) No ACT in falciparum malaria

b) Presumptive treatment with chloroquine should be given

c) Primaquine is contraindicated in infants and pregnant women

d) Primaquine is to be given for 7 days in falciparum malaria

Correct Answer - C

**Ans: C. Primaquine is contraindicated in infants and pregnant women**

**Primaquine:**

- **In G6PD deficiency persons.**
- Contraindicated during pregnancy & in lactation.
- Unless the infant being breast-fed has a documented normal G6PD level.

**180. The trivalent influenza vaccine contains all of the following strains except:**

a) H IN I

b) H3N2

c) H2N 1

d) Influenza B

Correct Answer - C

**Ans: C. H2N 1**

- Each seasonal influenza vaccine contains antigens representing three (trivalent vaccine) or four (quadrivalent vaccine) influenza virus strains: one influenza type A subtype H1 N1 virus strain, one influenza type A subtype H3N2 virus strain, and either one or two influenza type B virus strains.

**181. Most cost-effective method of infection control is:**

a) Repeated disinfectant use

b) Alcohol based rubbing

c) Prophylactic antibiotic therapy

d) Hand washing

Correct Answer - D

**Ans: D. Hand washing**

(Ref Park 24/e p378, 22/e p3)

In developing countries, handwashing with soap is recognized as a cost-effective, essential tool for achieving good health, and even good nutrition.

## 182. Which of the following is true about Rashtriya Swasthya Bima Yojana?

a) Applies to BPL families only

b) Rupees 30,000 per family member

c) Both inpatient and outpatient charges included

d) Patient pays first then it is reimbursed by government

Correct Answer - A

Answer- A. Applies to BPL families only

- Rashtriya Swasthya Bima Yojana provide health insurance coverage for Below Poverty Line (BPL) families.
- Beneficiaries under RSBY are entitled to hospitalization coverage up to 7 30,000 per family per year per hospitalization in public and private hospitals
- Beneficiaries need to pay only Rs.30/- as registration fee while Central and State Government pays the premium to the insurer selected by the State Government on the basis of a competitive bidding.

### 183. Recommended daily intake of iodine in pregnancy-

a) 90 microgram

b) 120 microgram

c) 150 microgram

d) 250 microgram

Correct Answer - D

Answer- D. 250 microgram

- Recommended daily intake of iodine in pregnancy is 250 microgram.

**184. To evaluate post-operative vision effects after cataract extraction surgery under NPCB, which of the following is used?**

a) Active surveillance

b) Sentinel surveillance

c) Passive surveillance

d) Routine checkup of all operated cases

Correct Answer - D

Answer- D. Routine checkup of all operated cases

- To evaluate postoperative vision effects after cataract extraction surgery under NPCB, routine checkup of all operated cases is used.
- Strategies under National Programme for Control of Blindness (NPCB)**
- Improving follow-up services of cataract operated patients and treating other causes of blindness like glaucoma
  - Shift eye camp approach to a fixed surgical approach and from conventional surgery to IOL installation for better quality of postoperative vision to operated patients.
  - Expand World Bank Project activities like construction of dedicated eye operation theatres, eye wards at district level, training of other ophthalmic equipment's to the work community.
  - To strengthen participants of voluntary organizations in the programme.
  - To enhance the coverage of eye care services in the tribal and underserved areas.
  - Screening of refractive errors in school going children.

## 185. What is under-5 mortality' rate in world by 2010?

a) 6 million

b) 8 million

c) 10 million

d) 12 million

Correct Answer - B

Answer- B. 8 million

- In 2012, 6.6 million, 2011, 6.9 million children underfive died, down from 7.6 million in, 8.1 million in 2009 and 12.4 million in 1990.

**186. Highly toxic insecticide, according to WHO classification, are coded as:**

a) Red

b) Green

c) Yellow

d) Blue

Correct Answer - C

Answer- C. Yellow

- Toxicity labels viz; red label, yellow label, blue label and green label are mandatory labels employed on pesticide containers in India identifying the level of toxicity of the contained pesticide.
- The schemes follow from the Insecticides Act of 1968 and the Insecticides Rules of 1971.
- Yellow label- Highly toxic- 51-500- Endosulfan, carbaryl, quinalphos, and others.

## 187. Which of the following is not true about screw feed technology

a) Reduces weight by 30%

b) Reduces volume by 80%

c) Ideal for pathological waste

d) Non-burn heat sterilization technique

Correct Answer - C

Answer- C. Ideal for pathological waste

- Screw-Feed Technology:
- A non-burn, dry thermal disinfection process
- Waste is reduced by 80% in volume
- Waste is reduced by 20-35 % in weight
- Suitable for treating infectious waste and sharps
- Should not be used to process pathological, cytotoxic, or radioactive waste.

## 188. Which of the following is true for ESI act?

a) Funeral benefit is up to Rs 50,000

b) The State Government's share of expenditure on medical care is 1/8; the ESI Corporation's share of expenditure on medical care is 7/8 of total cost

c) Person with daily wages of Rs 70 has to contribute Rs 300 towards ESI

d) Employee has to contribute 4.75% and employer contributes 8.75%

Correct Answer - B

Answer- B. The State Government's share of expenditure on medical care is 1/8; the ESI Corporation's share of expenditure on medical care is 7/8 of total cost

- ESI Act: The State Government's share of expenditure on medical care is 1/8; the ESI Corporation's share of expenditure on medical care is 7/8 of total cost.
- Employees State Insurance Act (1948):
- Funeral benefit is up to Rs 5000
- The State Government's share of expenditure on medical care is 1/8 of total cost of medical care; the ESI Corporation's share of expenditure on medical care is 7/8 of total cost of medical care.
- Person with daily wages of less Rs.70 per day are exempted from making any payments
- The employer contributes 4.75% of total wage bill; the employee contributes 1.75% of wages.

### 189. Area under Normal curve with $\pm 1$ SD:

a) 0.68

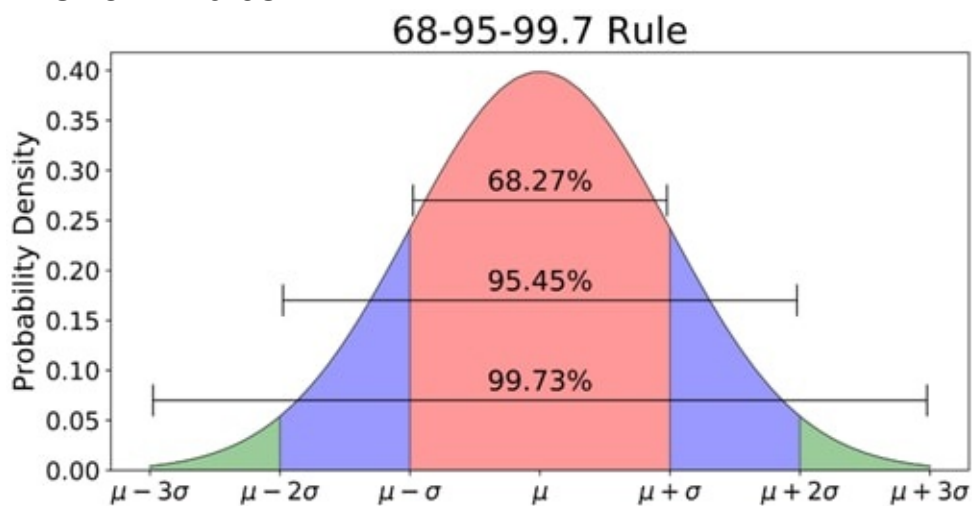
b) 0.17

c) 0.12

d) 0.34

Correct Answer - A

Answer- A. 0.68



- Area under Normal curve with + 1 SD is 0.68.

**190. In a study of 2000 population, mean value of hemoglobin is 13.5 gm, which follows normal distribution curve. Percentage of people having higher hemoglobin than 13.5 gm:**

a) 5%

b) 25%

c) 50%

d) 75%

Correct Answer - C

Answer- C. 50%

- In a population with normal distribution mean, median and mode are equal So, here median is also 13.5, which divides the population into two equal halves. So, 50% will be on either side of 13.5. Hence, Percentage of people having higher hemoglobin than 13.5 gm is 50.

## 191. Statistical 'Q' test is used for:

a) Comparing the proportion of means of 2 groups

b) To determine outliers

c) To determine normality distribution

d) Comparing the proportion of means of more than 2 groups

Correct Answer - B

Answer- B. To determine outliers

- Dixon's Q test, or simply the Q test, is used for identification and rejection of outliers.
- In statistics, an outlier is an observation point that is distant from other observations.
- An outlier may be due to variability in the measurement or it may indicate experimental error
- Outliers can occur by chance in any distribution, but they are often indicative either of measurement error or that the population has a heavy-tailed distribution.
- This test should be applied sparingly and never more than once to a single data set.

**192. Extremely toxic insecticide according to WHO classification, are coded as:**

a) Red

b) Green

c) Yellow

d) Blue

Correct Answer - A

Answer- A. Red

- Extremely toxic insecticide, according to WHO classification, is coded as Red.

**193. True statements regarding the calculation of HDI are all of the following except:**

a) The minimum value for combined gross enrolment ratio is fixed at 0%

b) The minimum value for adult literacy rate is fixed at 0

c) The maximum value of life expectancy at birth is taken as 100

d) The maximum value for per capita income is fixed at 40.000

Correct Answer - C

Answer- C. The maximum value of life expectancy at birth is taken as 100

- In human development index, maximum value at life expectancy at birth is taken as 85 years, not 100.
- Along and healthy life: Life expectancy at births
- Education index: Mean years of schooling and Expected years of schooling
- A decent standard of living: GNI per capita (PPP US\$)
- Human Development Index (HDI)- Longevity (Life expectancy at birth)
- Income (Real GDP per capita in PPP US\$)
- Knowledge (Mean years of schooling- Gross enrolment ratio and literacy rate)

**194. Immune thrombocytopenic purpura (ITP) is a complication observed with which of the following vaccines? (Asked twice)**

a) MMR

b) HIV conjugate polysaccharide vaccine

c) Typhoid Vi polysaccharide vaccine

d) Influenza vaccine

Correct Answer - A

Answer- A. MMR

ITP develop in one in every 24,000 doses of the MMR vaccine given

**Bruise-like spots**

- In rare cases, a child may get a small rash of bruise like spots a but two weeks after having the MMR vaccine.
- This side effect is linked to the rubella vaccine and is known as idiopathic thrombocytopenic purpura (ITP).

**195. Immune thrombocytopenic purpura (ITP) is a complication observed with which of the following vaccines?**

a) MMR

b) HIV conjugate polysaccharide vaccine

c) Typhoid Vi polysaccharide vaccine

d) Influenza vaccine

Correct Answer - A

Answer- A. MMR

ITP develop in one in every 24,000 doses of the MMR vaccine given

**Bruise-like spots**

- In rare cases, a child may get a small rash of bruise like spots a but two weeks after having the MMR vaccine.
- This side effect is linked to the rubella vaccine and is known as idiopathic thrombocytopenic purpura (ITP).

**196. Under the National Rural Health Mission, an ASHA will receive financial remuneration for all of the following except:**

a) Institutional deliveries

b) Measuring the birth weight of neonates

c) Zero dose of DPT and OPV

d) Registration of births

Correct Answer - C

Answer- C. Zero dose of DPT and OPV

- ASHA Payments under Janani Suraksha Yojana (JSY): On 45th Day
- 6 visits in institutional deliveries (Day 3, 7, 14,21,28,42)
- 7 visits in home deliveries (Day 1, 3,7,14,21,28, 42)
- Birth weight record
- Immunized with BCG, first dose of OPV & DPT
- Birth registration
- Mother & child are safe
- Other ASHA Payments
- Institutional deliveries
- Arrange transport of AN mother
- Escort AN mother to facility
- Completed immunization upto 1 & 2 years of age
- Pulse polio immunization
- Family planning services
- Sanitary napkins to adolescent girls
- Promote use of sanitary toilets
- DOTS provider

- Leprosy treatment
- Peripheral smear for malaria
- Malaria treatment

## 197. Pick the right answer when 2 screening tests are done in series:

a) Increased sensitivity and decreased specificity

b) Increased specificity and decreased sensitivity

c) Increased sensitivity and increased specificity

d) Decreased sensitivity and decreased specificity

Correct Answer - B

**Ans. b. Increased specificity and decreased sensitivity**

- Sensitivity: Ability of a screening test to identify correctly all those who have the disease (Cases).
- Specificity: Ability of a screening test to identify correctly all those who don't have the disease (healthy).
- Positive predictive value (PPV): Ability of a screening test to identify correctly all those who have the disease, out of all those who test positive on a screening test.
- Negative predictive value (NPV): Ability of a screening test to identify correctly all those who don't have the disease, out of all those who test negative on a screening test.

Screening tests used in the series: where the result of the first test determines whether to run the second test or not.

Screening tests used in parallel: where the second test is independently performed regardless of what the first test result is. And, both are done at the same time.

- If multiple tests are applied in series, the specificity & PPV will increase, the sensitivity & NPV will decrease.
- If multiple tests are applied in Parallel, the sensitivity & NPV will increase, the specificity & PPV will decrease.

**198. In a clinical trial, blood pressure was measured between in a group of patients before and after treatment, which of the following test will be suitable as at test of significance?**

a) Paired t-test

b) Mann Whitney U test

c) Student test

d) ANOVA

Correct Answer - A

**Ans. A. Paired t-test**

## 199. The test used to identify frozen vaccine is:

a) Shake test

b) Habel test

c) Shick test

d) Test

Correct Answer - A

### **Ans. a. Shake test**

Shake test is used to check if freeze-sensitive vaccines (e.g. Pentavalent,  $\delta$  PCV-10, TT or Hep. B have been subjected to freezing temperature likely to damage them.

### **Steps**

- Prepare a frozen control vial (same type, batch number and manufacturer as the vaccine to be tested frozen for at least 10 hours at  $-10^{\circ}\text{C}$ . and then let it thaw.
- Choose the suspected frozen test vial.
- Shake the control and test vials vigorously for 10-15 seconds.
- Allow the vials to rest on table side by side.
- If the vaccine in the suspected test vial shows a much slower sedimentation rate than the vaccine in the frozen control vial, we conclude that the test vaccine has most probably not been frozen and can be used.

**200. A healthy center reports 40 to 50 cases in a week in the community. This week there are 48 cases normally. This is called:**

a) Epidemic

b) Sporadic

c) Endemic

d) Outbreak

Correct Answer - C

**Ans. C. Endemic**

Ref: Park's Text book Preventive & Social Medicine 24<sup>th</sup> edn; Page no. 98 Endemic

- Constant presence of a disease or infectious agent in a defined geographical area.
- It is the usual or expected frequency of a disease in a population.

**201. In a subcenter area with crude birth rate of 20, what would be the expected number of ANC registrations?**

a) 60

b) 80

c) 100

d) 120

Correct Answer - A

**Ans. a. 60**

In a subcenter area with crude birth rate of 20, the expected number of ANC registrations should be approximately 55.

**Number of Expected Pregnancies per Year**

Expected no. of live-births (Y)/year = Birth rate (per 1000 population) x Population of the area/1000

**Number of Expected Pregnancies per Year**

- As some pregnancies may not result in a live birth (i.e., abortions & stillbirth may occur), the expected number of live births would be an under-estimation of the total number of pregnancies. Hence, a correction factor of 10% is required, i.e., add 10% to the figure obtained above.
- Total number of Expected Pregnancies  $Z = Y + 10\%$  of  $Y$
- Population under the subcentre = 5000
- Birth rate = 20
- Expected no. of live-births (Y)/year =  $20 \times 5000/1000 = 100$
- Total number of Expected Pregnancies  $Z = Y + 10\%$  of  $Y = 100 +$

10% of 100 = 110

- Expected number of ANC registrations will be half of yearly calculation = 55

## 202. Annual new case detection rate of leprosy as on 31st March, 2016 is:

a) 0.66 /10,000 population

b) 0.66/1,00,000 population

c) 9.7/10,000 population

d) 9.7/1,00,000 population

Correct Answer - D

Ans. d. 9.7/1,00,000 population

Annual new case detection rate of leprosy as on 31" March, 2016 is 9.7/1,00,000 population.

### **NLEP – Annual Report for the year 2015-16:**

- Based on the reports received from all the States and UTs for the year of 2015 -16 (Annexure –I), current leprosy situation in the country is as below:
- **A total of 127334 new cases were detected during the year 2015-16, which gives Annual New Case Detection Rate (ANCDR) of 9.71 per 100,000 population, as against 125785 cases in 2014-15.**
- A total of 86028 leprosy cases are on record as on 1st April 2016, giving a **Prevalence Rate (PR) of 0.66 per 10,000 population**, as against 88833 cases in 1<sup>st</sup> April 2015.
- Detailed information on new leprosy cases detected during 2015-16 indicates the proportion of MB (51.27%), Female (38.33%), Child (8.94%), Grade II Deformity (4.60%), ST cases (18.79%) and SC cases (18.57%).
- A total of 5851 Gr. II disability detected amongst the New Leprosy Cases during 2015-16, indicating the Gr. II Disability Rate of 4.46 / million population (Annexure-II)
- A total of 11389 child cases were recorded, indicating the **Child**

**Case rate of 8.94% (Annexure-III).**

**203. 92. A clinical trial was conducted with 15225 hypertensive patients allotted in the intervention group (New drug) and control group (Old drug) respectively. Results of the research study are given in the following table. Calculate the absolute risk reduction (ARR) and relative risk (RR):**

	Control group (old drug)	Intervention group (new drug)
Developed HT complications	1800	1620
Did not develop HT complications	13425	13605
Total subjects	15225	15225

a) ARR = 10% and RR = 0.9

b) ARR = 1% and IZR = 9

c) ARR = 1% and RR = 0.9

d) ARIZ = 10% and RR = 9

Correct Answer - C

**Ans. C. ARR = 1% and RR = 0.9**

(Ref. Park 24/e p83)

In the given situation, absolute risk reduction (ARR) is 1% and relative risk (RR) is 0.9.

**Relative Risk (RR)**

$$RR = I_{Exp} / I_{Non-Exp}$$

- RR is the ratio of the risk in the exposed divided by the risk in the unexposed.

**Attributable Risk (AR)**

$$AR = (I_{Exp} - I_{Non-Exp}) / I_{Non-Exp} \times 100$$

- AR indicates the number of cases of a disease among exposed individuals that can be attributed to that exposure
- It is excess risk or risk difference
- Useful measure of extent of public health problem caused by an exposure

**Population Attributable Risk (PAR)**

$$AR = (I_{Total} - I_{Non-exp}) / I_{Total} \times 100$$

PAR indicates the number (or proportion) of cases that would not occur in a population if the factor were eliminated.

	<b>Control group (old drug)</b>	<b>Intervention group (New drug)</b>
<b>Developed HT complications</b>	1800	1620
<b>Did not develop HT complications</b>	13425	13605
<b>Total subjects</b>	15225	15225

- IC = Incidence of events (hypertensive complications) in the control group =  $1800 / 15225 = 0.118 = 11.8\%$
- IT = Incidence of events (hypertensive complications) in the treatment group =  $1620 / 15225 = 0.106 = 10.6\%$
- Absolute risk reduction (ARR) is also known as risk difference.
- $ARR = IC - IT = 11.8 - 10.6 = 1.2\%$
- Relative risk (RR) =  $IT / IC = 0.106 / 0.118 = 0.9$

**204. CA-125 is a marker for the screening of ovarian cancer. To characterize this test, histopathological confirmation of ovarian cancer was done in a cohort of patients. 60/100 women who tested positive for this test had ovarian cancer and 20/100 women who tested negative had ovarian cancer. What is the negative predictive value of this test?**

a) 20/100

b) 40/100

c) 60/100

d) 80/100

Correct Answer - D

**Ans: D. 80/100**

- Negative predictive value (NPV): Ability of a screening test to identify correctly all those who don't have the disease, out of all those who test negative on a screening test.

		The Truth		
		Has the disease	Does not have the disease	
Test Score:	Positive	True Positives (TP) a	False Positives (FP) b	$PPV = \frac{TP}{TP + FP}$
	Negative	False Negatives (FN) c	True Negatives (TN) d	$NPV = \frac{TN}{TN + FN}$

<b>Sensitivity</b> $\frac{TP}{TP + FN}$ Or, $\frac{a}{a + c}$	<b>Specificity</b> $\frac{TN}{TN + FP}$ $\frac{d}{d + b}$
---	---

Negative Predictive Value (NPV) = Number of true negatives / (Number of true negatives + number of false negatives).

**Disease present    Disease absent**

Test Positive	60 (a: TP)	40 (b: FP)
Test Negative	20 (c: FN)	80 (d: TN)
Total	80	120

- True negatives = 80
- Total negatives = 100
- Negative predictive value = 80/100 = 80%.

**205. Which of the following is the best for determining the threshold for diagnosis of a positive test?**

a) Analysis of variance

b) Pearson coefficient

c) Receiver-operating characteristic curve

d) Pre-test probability

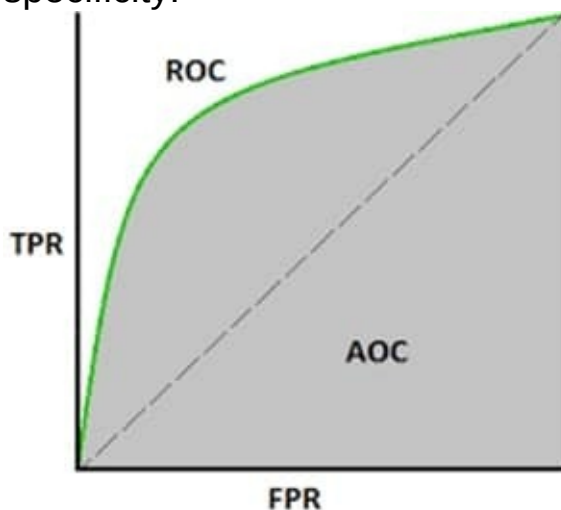
Correct Answer - C

**Ans: C. Receiver-operating characteristic curve**

(Ref <http://ilvwww.lexjansen.com/nesteg/ne.sug10/hl/h107.pdf>)

**Receiver-operating characteristic (ROC) curve:**

- Defined as a plot of test sensitivity as they coordinate versus its I-specificity or false positive rate (FPR) as the x coordinate.
- Graphic presentation of relationship between both sensitivity & specificity.



**Uses:**

- Effective method for evaluating diagnostic test's performances.
- Excellent way to compare diagnostic tests.
- Best for determining threshold for diagnosis of positive test.
- Helps decide optimal model through determining best threshold for diagnostic test.

**206. A study was done in 3 states to see the mean blood pressure in each community. Health workers were assigned and they visited each house in the three communities. Mean blood pressure in each community was found and compared. What type of study design is represented here?**

a) Cohort study

b) Cross-sectional study

c) Field trial

d) Case control study

Correct Answer - B

**Ans: B. Cross-sectional study**

(Ref Park 24/e p74, 23/e p69; 22/e p76).

- The study in question is of cross-sectional study type.
- **Cross-sectional study:**
- Type of observational study design analyzing data collected from a population (or representative subset) at a specific point in time.
- Also referred as “prevalence study”.
- Simplest form of an observational study.
- Based on single examination of a cross-section of population at one point of time.
- Results can be projected on whole population, provided correctly sampled.

- More useful for chronic rather than short-lived diseases.
- Provides little information about incidence or natural history of disease.

**207. A 42 years old woman from a dry state who ingested rye for long time presented with complaints of weakness in both lower limbs, nausea and fatigue. Over due course of time, she is completely unable to walk. What is the most likely cause?**

a) Argemone mexicana

b) Amanita

c) Ergot alkaloids

d) Lathyrus sativus

Correct Answer - D

**Ans: D. Lathyrus sativus**

(Ref Park 24/e p682, 23/e p644, 657).

- This case is suggestive of food adulteration & neurolathyrism.
- Caused by Lathyrus sativus.
- **Neurolathyrism:**
- Crippling disease of CNS.
- **Features:**
- Characterized by gradually developing spastic paralysis of lower limbs.
- Mostly in adults consuming pulse, Lathyrus sativus.

**208.** According to the new RNTCP guidelines, the following is not a suspect of tuberculosis

a) Confirmed extra-pulmonary tuberculosis patient with cough of 2 weeks or more

b) HIV-positive patient with cough of any duration

c) Contacts of sputum positive tuberculosis patient with cough of any duration

d) Any individual having cough of duration 2 weeks or more

Correct Answer - A

**Ans: A. Confirmed extra-pulmonary tuberculosis patient with cough of 2 weeks or more**

(Ref: Park 24/e p188-189, 23/e p178: 22/e p 168;  
<http://tbcindia.nic.in>)

- **A contact of confirmed extra-pulmonary tuberculosis patient - TB suspect.**
- If persistent cough of any duration (2 weeks is not required).  
**TB suspects:**  
**Pulmonary TB Suspect:**  
**Defined as:**
  - Any individual having cough of >2 weeks.
  - Contacts of smear positive TB patients having cough of any duration.
  - Suspected/confirmed extra-pulmonary TB patient having cough of any duration.
  - HIV-positive patient having cough of any duration.
- **MDR-TB Suspect:**
  - Any TB patient who fails an RNTCP Category failing I or III treatment regimen.
  - Any RNTCP Category II patient with sputum smear positive at end of

4<sup>th</sup> month of treatment or later.

- Close contacts of MDR-TB patients with smear positive pulmonary TB.

**209. A study was conducted to find average intra-ocular pressure. IOP was measured in 400 people and the mean was found to be 25 mm Hg with a standard deviation of 10 mm Hg. What is the range in which 10P of 95% of the population would be lying?**

a) 22-28 mm Hg

b) 20-30 mm Hg

c) 24-26 mm Hg

d) 23-27 mm Hg

Correct Answer - C

**Ans: C. 24-26 mm Hg**

- Standard error,  $SE = \{\text{standard deviation} / n\}$
- $n =$  sample size
- $C =$  Confidence coefficient = 1.96 for 95% confidence interval = 2.58 for 99% confidence interval = 3.29 for 99.9% confidence interval
- Hence in this question,  $n = 400$
- $SD = 10$
- $SE = 10/400 = 10/20 = 0.5$
- Mean statistic = 25 mm Hg.
- Now for 95% confidence interval,
- $C = 2$  approximately 95%
- $CI = 25 - 2 \times 0.5$  to  $25 + 2 \times 0.5 = 24-26$  mm Hg
- Hence, 95% CI of IOP = 24 to 26 mm Hg.

**210. In a cohort study, to study association between factor and disease, the risk ratio was calculated to be equal to 1. What does this signifies?**

a) There is no association present between the factor and the disease

b) There is positive association between the factor and the disease

c) There is negative association between the factor and the disease

d) Data insufficient to comment

Correct Answer - A

**Ans: A. There is no association present between the factor and the disease**

**Estimation of relative risk (RR):**

- Direct measure (or index) of strength of association between suspected cause and effect.
- $RR=1$  - Indicates no association.
- $RR > 1$  - Indicates positive association between exposure & disease under study.
- $RR = 2$  - Indicates incidence rate of disease is 2 times higher in exposed group (compared with unexposed).
- Important in etiological enquiries.

## 211. Which or tile following is true about antigenic drift?

a) It is seen only in influenza virus type A

b) It is a result of frameshift mutation

c) It mostly affects the matrix protein

d) It mostly affects the matrix protein

Correct Answer - D

**Ans: D. It mostly affects the matrix protein**

(Ref: Park 24/e p164, 23/e p154, 22/e p145)

**Antigenic drift:**

- Mechanism for variation in viruses that involves the accumulation of mutations within genes that code for antibody binding sites.
- Results from genetic recombination of human with animal or avian virus, providing a major antigenic change.
- This can cause a major epidemic or pandemic involving most or all age groups.
- Antigenic drift involves point mutation in the genes owing to selection pressure by immunity in the host population.
- This results in a new strain of virus particles, which cannot be inhibited as effectively by the antibodies that were originally targeted against previous strains, making it easier for the virus to spread throughout a partially immune population, responsible for seasonal epidemics of influenza.

**212. Which of these is the correct dosing schedule according to the Nation Iron Plus Program made to tackle iron-deficiency anemia?**

a) 20 mg of elemental iron to all 2-5-year-old children biweekly for an entire year

b) 100 ma of elemental iron and 500 micrograms of folic acid to pregnant women weekly for an entire year

c) 100 mg of elemental iron and 500 micrograms of folic acid to pregnant women biweekly for an entire year

d) 20 mg of elemental iron and 100 micrograms of folic acid to 2-5-year-old children weekly for an entire year

Correct Answer - B

**Ans: B. 100 ma of elemental iron and 500 micrograms of folic acid to pregnant women weekly for an entire year**

(Ref: Park 22/e p596; <http://www.nrhmhp.gov.in/sites/default/files/files/Iron%20plus%20initiative/020for%206%20months%20-5%20years.pdf>)

- According to the National Iron Plus Program made to tackle iron-deficiency anemia, 100 mg of elemental iron and 500 micrograms of folic acid should he given to pregnant women weekly for an entire year.

**213. According to RNTCP, sputum samples for testing of TB are packed in two containers, which are labelled as:**

a) Alpha and Beta

b) 1 and 2

c) A and B

d) Y and Z

Correct Answer - C

**Ans: C . A and B**

(Ref: Park 24/e p192, 23/e p182, 22/e p170; <http://tbcindia.nic.in/WriteReadData/1892s/9659721466Guideline%20for%20Partnership.pdf>)

- According to RNTCP, sputum samples for testing of TB are packed in two containers labeled as A and B.
- The sputum samples are labeled with a serial number and a suffix a-b with regard to the spot-morning samples respectively.
- Early morning specimen is always labeled as "b", while the first spot specimen is labeled as "a".
- It is important to label sputum containers properly.
- Sputum containers should always be labeled on the side, and never on the lid, as the lid from one container may be placed on another container resulting in specimens being labeled incorrectly.

## 214. All of the following are duties of an ASHA worker except:

a) Primary screening for prevalence of non-communicable diseases

b) Administering zero dose of DPT and OPV

c) Assessing the success of national programs under ANM

d) All

Correct Answer - B

**Ans: C. Administering zero dose of DPT and OPV**

Ref: Park 24<sup>le</sup> p936, 23<sup>le</sup> p449, 22<sup>le</sup> p414; Ministry of Health anti Family Welfare (MoHFW). (2005b). Reading Material for ASHA. Government of India)

- ASHA doesn't receive financial remuneration for administering zero dose of DPT and OPV is not the function of ASHA.
- ASHA Payments under Janani Suraksha Yojana (JSY): On 45th Day:**
- 6 visits in institutional deliveries (Day 3, 7, 14, 21, 28,
  - 7 visits in home deliveries (Day 1, 3, 7, 14, 21, 28, 42).
  - Birth weight record
  - Immunized with BCG, first dose of OPV & DPT
  - Birth registration
  - Mother & child are safe

## 215. A psychiatrist is not posted at:

a) PHC

b) Military hospitals

c) District hospitals

d) Hospitals with medical colleges

Correct Answer - A

**Ans: A. PHC**

(Ref Park 24/e p944, 23/e p90b, 221e p847).

- A psychiatrist is not posted at PHC.
- **For sub-centre area of PHC**
- Apart from the essential staff, the desirable staff for both type A and type B PHC are:
- One of the two medical officers (MBBS) should be lady doctor, if the delivery case load is 30 or more per month.
- One AYUSH medical officer to provide choice to the people, where as AYUSH facility is not available in the vicinity.
- One staff nurse/nurse midwife.
- One health educator at the PHC.
- That makes total staff at type A PHC 18 and at type B PHC 21.

## 216. ABC and VED analysis at PHC are done for:

a) Drug inventory

b) Staff management

c) Vaccination coverage

d) National Programs implementation.

Correct Answer - A

**Ans: A. Drug inventory**

- ABC and VED analysis at PHC are done for drug inventory.
- Inventory control is a scientific system which indicates as to what to order, when to order, and how much to order, and how much to stock so that purchasing costs and storing costs are kept as low as possible.
- It helps to protect against the fluctuation in supply and demand, uncertainty and minimise waiting time.
- There are various methods involved for inventory control but two are commonly used: Always, better and control (ABC) and vital, essential and desirable (VED).

## 217. True about Total Goitre Rate (TGR) is:

- a) It is an indicator of iron deficiency in the community
- b) Community survey of TGR does not require doctors in the team
- c) Goitres are classified as not visible, palpable and visible
- d) Goitres are classified as not visible, palpable and visible

Correct Answer - D

**Ans: D. Goitres are classified as not visible, palpable and visible**

(Ref: Ghai 8le p519)

- The term 'endemic goitre' refers to a total goitre rate of >5 percent in a given community.
- Total goitre rate is an indicator of iodine deficiency, which causes brain damage and mental retardation.
- Endemic goiter is present when the prevalence of goiter in a defined population exceeds 5%.
- Endemic goiter is graded by the method of WHO.
- Screening estimates of iodine intake are usually derived from 24-hr urinary excretion values or urinary iodine concentration expressed in relation to creatinine concentration.

**218. Which of the following is the best study design to assess in quick time the strength of association between smoking and lung cancer?**

a) Cross-sectional study

b) Case control study

c) Randomized controlled trial

d) Cohort study

Correct Answer - B

**Ans: B. Case control study**

(Ref: Park 24/e p76, 23/e p71; 22/c p76).

- Best study design to assess in quick time the strength of association between smoking and lung cancer is case control study.
- Permanent method of epidemiological investigation.
- Case control studies, often called retrospective studies are a common first approach to test causal hypothesis.

**Distinct features:**

- Both exposure and outcome (disease) have occurred before the start of study.
- Study proceeds backwards from effect to cause.
- Uses a control or comparison group to support or refute an inference.

**219. All of these are continuous variables except:**

a) Height in cms

b) Weight in kg

c) Blood groups A. B. ABO

d) Age in years and months

Correct Answer - C

**Ans: C. Blood groups A. B. ABO**

Ref High Yield Statistics/p13).

- Blood groups (A, B, ABO) is a discrete variable.

**220. Which of the following is used for selecting patients with respect to potential factors that will affect the results?**

a) Systematic random sampling

b) Simple random sampling

c) Stratified random sampling

d) Cluster sampling

Correct Answer - C

**Ans: C. Stratified random sampling**

Ref. Park 24/e p886, 23/e p850, 22/e p792; BK Malunan 6th/100-101).

- Stratified random sampling is used for selecting patients with respect to potential factors that will affect the results.

**Stratified random sample:**

- The sample is deliberately drawn in a systematic way so that each portion of the sample represents corresponding strata of universe.
- This method is particularly useful where one is interested in analyzing the data by a certain characteristic of population, viz. Hindus, Christians, Muslims, age-groups etc.

**221. Which of these indicators is used at anganwadi centers for growth monitoring in children?**

a) Height for age

b) Weight for age

c) Weight for height

d) Mid-arm circumference

Correct Answer - B

**Ans: B. Weight for age**

Ref: Park 241e p582, 23/e p547, 22/e p506)

- India has adopted the new WHO Child Growth Standards (2006) in February 2009 for monitoring the young child growth and development within the National Rural Health Mission and the ICDS.
- These are based on weight for age.
- Weight for age is used at anganwadi centers for growth monitoring in children.

**222. A study finds no significant association between two variables but truly there exists a difference. What type of error is this?**

a) Type I error

b) Type II error

c) Random error

d) Systematic error

Correct Answer - B

**Ans: B. Type II error**

(Ref: High Yield Biostatistics/p46)

**Type I Error**

- The null hypothesis is true but rejected (False positive)°
- Probability of type I error is given by p value°
- Significance (alpha) level is the maximum tolerable probability of type I errors°
- Keep type I error to be minimum; then results are declared to be statistically significant

**Type II Error**

- Null hypothesis is not false but is not rejected/accepted (false negative)°
- Probability of type II error is given by beta°

## 223. The strength of association between the risk factor and disease is measured by

a) Attributable risk

b) Absolute risk of the variable

c) Odds ratio/Relative risk

d) P-value

Correct Answer - C

**Ans: C. Odds ratio/Relative risk**

- The strength of association between the risk factor and disease is measured by the Odds ratio/Relative risk.
  - The estimation of disease risk associated with exposure is obtained by an index known as relative risk (RR) or risk ratio, which is defined as the ratio between the incidence of disease among exposed persons and incidence among non-exposed.
- Odds ratio (Cross product ratio):**
- From a case-control study, we can derive what is known as the odds ratio (OR) which is a measure of the strength of the association between risk factor and outcome.
  - Odds ratio is closely related to relative risk.

**224. What will be the 95% confidence interval (CI) for an estimated prevalence of 10% and a sample size of 100?**

a) 2-18

b) 4-16

c) 7-13

d) Given data inadequate for calculation of class intervals.

Correct Answer - B

**Ans: B. 4-16**

## 225. Which of the following statements is not true about incidence?

a) Incidence decreases when a programme is effective

b) Vaccination strategies decrease the incidence of a disease

c) Newer and effective treatment modalities decrease the incidence

d) Incidence implies number of new cases detected over a fixed time

Correct Answer - C

**Ans: C. Newer and effective treatment modalities decrease the incidence**

Ref: Park 24/c p67, 23/e p62, 22/c p59).

- Newer and effective treatment modalities do not decrease the incidence.
- Improvements in treatment may decrease the duration of illness and may decrease prevalence.

### **Relation between Incidence & Prevalence**

- **Given the assumption that population is stable & incidence and duration are not changing.**
- $\text{Prevalence} = \text{Incidence} \times \text{Mean duration of disease}$
- Prevalence describes balance between incidence, mortality & recovery.
- Incidence reflects causal factors.
- Duration reflects prognostic factors.

**226. APGAR scores of 30 children are recorded in a hospital and most of the readings are found to be 7 or above. What can you make out about this data distribution?**

a) Positively skewed data

b) Negatively skewed data

c) Normal distribution

d) Symmetrically skewed data

Correct Answer - B

**Ans: B. Negatively skewed data**

(Ref Park 24le p886, 23le p847, 22le p786; High Yield Statistics/p67)

- Since more number of children has a higher APGAR score, the tail of the distribution curve will be towards the right.
- Hence, the data will be negatively skewed.

#### **Skewed Data**

##### **Negative skew**

- Left tail is longer°
- Mass of distribution is concentrated on the right of figure°
- Distribution is said to be left-skewed, left-tailed, or skewed to the left°.

##### **Positive skew**

- Right tail is longer°
- Mass of distribution is concentrated on the left of figure°.
- Distribution is said to be right-skewed, right-tailed, or skewed to the right°.

**227. You have been asked to design a study for a disease whose prevalence in the community is 10%. The alpha error has to be kept at 5% with a relative precision of 20% and a power of 20%. What will be the accurate sample size for this study?**

a) 400

b) 900

c) 1800

d) 3600

Correct Answer - B

**Ans: B. 900**

**228. The following figures represent the frequencies of a disease in 3 different areas. Identify the correctly matched outbreak pattern in each area:**

**Area A - 48-50 cases per week, last week 43 cases**

**Area B - 1-3 cases per week, last week 13 cases**

**Area C - 10-13 cases per year, last week 1 case**

a) Endemic-Epidemic-Pandemic

b) Epidemic-Endemic-Sporadic

c) Endemic-Epidemic-Sporadic

d) Pandemic-Endemic- Sporadic

Correct Answer - C

**Answer- C. Endemic-Epidemic-Sporadic**

Area A: Persistent prevalence of cases in high numbers in the area-  
Endemic

Area B: Usually less number of cases, sudden surge in cases last  
week -Epidemic

Area C: Very less number of cases annually, no increase in recent  
numbers -Sporadic

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For any queries inbox @murtazakuchay

**229. A patient with cough was sputum AFB negative but chest X-ray was suggestive of TB. What should be the next step according to RNTCP?**

a) Line probe assay

b) Culture

c) Nucleic acid amplification test

d) Tuberculin test

Correct Answer - C

**Answer- C. Nucleic acid amplification test**

Cartridge Based Nucleic Acid Amplification Test (CB-NAAT): The CB'NAAT is known as the GeneXpeft in most countries other than India This is preferred first diagnostic test in children and people with TB and HIC co-infection

**230. A researcher said he has discovered a new drug which is effective in chronic hypertensives with a p value of  $< 0.10$ . Which of the following is true regarding the same?**

a) The test is 90% reproducible

b) 90% of test results could have occurred by chance

c) Not more than 10% of the people benefitted by the drug could be due to chance

d) 90% of patients will be benefitted by giving the drug

Correct Answer - C

**Answer- C. Not more than 10% of the people benefitted by the drug could be due to chance**

The p (probability) value is used when we wish to see how likely it is that a hypothesis is true. The hypothesis is usually that there is no difference between two treatments, known as "null hypothesis".

- The p value gives the probability of any observed difference having happened by chance.
- $p:0.5$  means that the probability of any observed difference having happened by chance is 0.5 or 50:50.
- Similarly, a p value of  $<0.10$  means that the probability of it happening by chance is 10%.
- In the question, the probability that the drug affected the chronic hypertensives by chance is less than 10%. Hence, 90% of the subjects were benefitted by the drug.

**231. A radiotherapist prescribes a new drug combination of chemotherapy and immunotherapy for metastatic melanoma. It prolongs the survival. Which of the following is true in this situation?**

a) Incidence reduces and prevalence increases

b) Incidence remains the same and prevalence increases

c) Incidence reduces and prevalence remains the same

d) Incidence increases and prevalence reduces

Correct Answer - B

**Answer- B. Incidence remains the same and prevalence increases**

Incidence: Number of new cases occurring in a defined population during a specified period of time.

- It is expressed as per 1000 per year.
- Incidence is a rate
- Incidence is not affected by duration of disease
- Use of incidence is generally restricted to acute conditions.
- This is a much more accurate measure of risk than prevalence.

**232. A research was undertaken by a group of psychiatrists and obstetricians to assess postpartum depression in mothers giving birth to male versus female children according to the Edinburgh depression scale (EPDS). What test should be used to compare the outcomes?**

a) Student's t-test

b) Paired t-test

c) Chi-square test

d) Pearson's correlation coefficient

Correct Answer - C

**Answer- C. Chi-square test**

Chi-square test- Comparison of two independent qualitative variables

A 'non-parametric test' of significance

- Used to 'test significance of association between 2 or more qualitative characteristics
- Used to compare proportions in 2 or more groups
- Used for non-Normal (non-Gaussian) distributions

**233.**

**You went to a sub center as part of an audit.  
How many infants should be registered with a  
health worker working there?**

a) 50

b) 100

c) 150

d) 200

Correct Answer - B

Ans: B. 100

*Ref: K Park, 23d ed., pg. 524, 567*

- Estimated no. of infants in a health sub centre covering 5000 population can be calculated as follows:
- No. of live birth = Birth rate x Population/ 1000
  - =  $20.4 \times 5000/1000 = 102$
- Infant mortality for sub centre = No. of live birth x IMR/1000
  - =  $102 \times 34/1000$
  - = 3.5 (for calculation purpose we assume it 4)
- Therefore, total number of infants =  $102 - 4$ 
  - = 98
- Hence correct answer is 100 (nearest value).

## 234. Under National Health Mission which committee makes plan for village health?

a) Panchayat health committee (PHC)

b) Village health planning and management committee (VHPMC)

c) Village health sanitation and nutrition committee (VHSNC)

d) RogiKalyan Samiti

Correct Answer - C

Ans: C. Village health sanitation and nutrition committee (VHSNC)

*Ref: K Park, 23'd ed.,, pg. 450-451 and Health Policies and Programmes in India, DK Taneja, 12'h ed., pg. 82*

### **VHSNC:**

- Sub-committee or a standing committee of the Gram Panchayat.
- The VHSNC acts as a platform for convergence between different departments & committees at village level.
- The VHSNCs shall be supported to develop village health plans to ensure convergent action on social determinants of health, ensure access to health services, especially of the more marginalised sections in the village, and support the organization of the Village Health and Nutrition Day.

**235. All of the following can be analyzed with chi square test except?**

a) Sex and stage of cancer

b) Heart rate/min and Age

c) Benign or malignant, and type of surgery

d) Age group and cancer stage

Correct Answer - B

Ans: B. Heart rate/min and Age

*Ref: Biostatistics Principles and Practice by B Antonisamy, Mc graw hitt publication,pg. 117.*

- In given question, all options except heart rate/minute and age are of qualitative variables (nominal or ordinal).
- Qualitative variables are usually presented in frequencies or count.
- chi square test is used to compare any difference or association between two qualitative variables.
- Heart rate/minute and age are quantitative variables where chi square test cannot be applied.
- Hence correct answer is b here.

**236. Which of the following parameters is used to determine the sensitivity of vaccine due to heat?**

a) VVM

b) VMV

c) VCM

d) VMM

Correct Answer - A

Ans: A. VVM

*Ref: K Park, 23'd ed, pg. 110*

- VVM (Vaccine Vial Monitor)
- VVM is a label containing a heat-sensitive material which is placed on a vaccine vial to register cumulative heat exposure over time.
- It has outer blue circle and inner white square.

## 237. Government initiative to improve the facilities in labour room in all govt hospitals is under

a) Ayushman Bharat Scheme

b) Laqshya

c) Newborn delivery room program

d) Janani suraksha yojana

Correct Answer - B

### **Ans.B. Laqshya**

'LaQshya' programme of the Ministry of Health and Family Welfare aims at improving quality of care in labour room and maternity Operation Theatre (OT).

#### **Objective:**

- To reduce maternal and newborn mortality & morbidity due to APH, PPH, retained placenta, preterm, preeclampsia & eclampsia, obstructed labour, puerperal sepsis, newborn asphyxia, and sepsis, etc.
- To improve Quality of care during the delivery and immediate post-partum care, stabilization of complications and ensure timely referrals, and enable an effective two-way follow-up system.
- To enhance satisfaction of beneficiaries visiting the health facilities and provide Respectful Maternity Care (RMC) to all pregnant women attending the public health facility.

## 238. Which of the following are the responsibilities of ASHA worker ?

a) Making slides of Malaria

b) Accompanying the pregnant to the Labour room

c) To generate demand on key determinants of health

d) Dot Providers of Directly Observed Treatment Short-course

Correct Answer - B:C:D

**Ans. B. C. D.**

### **ROLES OF ASHA WORKERS:**

- ASHA create awareness and provide information to the community on determinants of health such as proper diet and nutrition, basic sanitation and hygienic practices, healthy living and working conditions, information on existing health services and the need for timely utilization of health and family welfare services at doorsteps.
- Conduct home visits of the pregnant women/mother/newborn under Home Based Post Natal Care (HBPNC), and they are supposed to counsel pregnant women on birth preparedness, importance of safe delivery, breastfeeding and complementary feeding, immunization, contraception and prevention of common infections including Reproductive Tract Infection/Sexually Transmitted Infection (RTIs/STIs) and care of the young child.
- Mobilize the community and facilitate them in accessing health and health related services available at the village/sub-center and other public health facilities, such as Routine Immunization (RI), Ante Natal Check-ups (ANCs), Post Natal Check-ups (PNCs), sanitation and other services being provided by the Government. ASHA have to work with the Village Health Sanitation Nutrition Committee/Village Level Committee (VHSNC/VLC) of the Gram

Panchayat to facilitate a comprehensive village health plan with ANM, AWWs and PRI members.

- Mobilize targeted community once in a month for the celebration of Village Health Nutrition Days (VHND) at their Aanganwadi Centre.
- ASHA have to arrange escort/accompany pregnant women & children requiring treatment/ admission to the nearest pre- identified health facility i.e. Primary Health Centre/Community Health Centre/ First Referral Unit (PHC/CHC /FRU).
- ASHA have to provide primary medical care for minor ailments such as diarrhoea, fevers, and first aid for minor injuries.
- Dot Providers of Directly Observed Treatment Short-course (DOTS) under Revised National Tuberculosis Control Programme (RNTCP).
- ASHA are also acting as a Depot Holder for essential provisions being made available to every habitation like Oral Rehydration Therapy (ORS), Iron Folic Acid Tablet (IFA), chloroquine, Disposable Delivery Kits (DDK), Contraceptives (Condoms, Oral Pills, Emergency Pills), etc. Provision of Drug Kit and HBPNC Kit has been made for ASHA. Contents of the Drug/HBPNC Kits are based on the recommendations of the expert/technical advisory group set up by the Govt of India.
- ASHA are expected to provide first information about the births and deaths in her village and any unusual health problems/disease outbreaks in the community to the SC/PHC/CHC or directly to the District Authorities or even to the State HQ at the NRHM Help Line.

**239. Biomedical waste management in Match the following:**

- A. Chemical waste**
- B. Syringe Caps**
- C. Scalpel**
- D. Glasswares**
- E. Gloves**

a) Category No.4

b) Category No.6

c) Category No.7 and Category No.10

d) All

Correct Answer - D

**Ans: D. All**

**HOSPITAL WASTE CATEGORIES:**

<b>Categories of bio-medical waste in India</b>	
<b>1</b>	Human anatomical waste
<b>2</b>	Animal waste
<b>3</b>	Microbiology and biotechnology waste
<b>4</b>	Waste sharps (used and unused needles, syringes, scalpels etc)
<b>5</b>	Cytotoxic drugs and discarded medicines
<b>6</b>	Solid waste (contaminated with blood and fluids including cotton, dressings, soiled plasters, beddings)
<b>7</b>	Solid waste (other than waste sharps such as rubber tubes,

	catheters and I.V sets)
<b>8</b>	Liquid waste
<b>9</b>	Incineration ash
<b>10</b>	Chemicals used in disinfection, insecticides

**COLOR CODING & TYPES OF CONTAINER:**

<b>Colour coding</b>	<b>Type of Container</b>	<b>Waste Category</b>	<b>Treatment options</b>
Yellow	Plastic Bags	Human and animal wastes, Microbial and Biological wastes and soiled wastes (Cat 1,2,3 and 6)	Incineration/ Deep Burial
Red	Disinfected container/ Plastic bags	Microbiological and Biological wastes, Soiled wastes, Solid wastes (Cat 3,6,7)	Autoclave/ Microwave/ Chemical Treatment)
Blue/ White/ Transparent	Plastic bag, Puncture proof container	Waste sharps and solid waste ( Cat 4 &7)	Autoclave/ Microwave/ Chemical Treatment Destruction and Shredding
Black	Plastic bag	Discarded medicines, Cytotoxic drugs, Incineration ash and chemical waste (Cat 5,9 & 10)	Disposal in secured land fills
Green	Plastic Container	General waste such as office waste, food waste & garden waste	Disposed in secured landfills

## 240. Immunization that could help post-disaster includes

a) Measles

b) Cholera

c) Typhoid

d) All

Correct Answer - A

**Ans. A. Measles**

**Vaccines recommended in disasters**

- Following vaccines are recommended
- 1. Children < 10 years:- DPT, inactivated polio (IPV), H.influenzae type b (Hib), hepatitis B, pneumococcal conjugate vaccine (PCV), measles-mumps-rubella (MMR), varicella vaccine, influenza, hepatitis A and rotavirus.
- 2. Children and adolescents (11-18 years):- Tetanus, diphtheria, pertussis, meningococcal conjugate vaccine (MCV), Influenza.
- 3. Adults (>18 years):- Tetanus, diphtheria, pertussis, pneumococcal polysaccharide vaccine (PPSV23), and influenza.
- Vaccination against typhoid and cholera is not recommended.

**241. In a village of 20,000 population 456 births occurred in april, 56 showed no signs of life at birth, 56 died before 28 days of life, 34 died between 28 days- 1 year, 500 was total number of deaths in that year. Infant mortality rate?**

a) 197.4

b) 320

c) 225

d) 125

Correct Answer - C

**Ans.C.225**

IMR = Number of deaths of children less than 1 year of age in a year  
X 1000/number of live births in the same year.

$$\text{IMR} = 56 + 34 \times 1000 / 400 = 225$$

**242. A Study conducted in a population. Diastolic Blood Pressure mean 110 mm Hg with SD of 11 mm Hg, Vitamin D mean 18 ng/ml with SD of 3 ng/ml. what is the relation between the two variance**

a) Variance of Vitamin D > DBP

b) Variance of DBP > 4 times Vitamin D

c) Data insufficient to comment upon

d) None

Correct Answer - B

**Ans.b). Variance of DBP > 4 times Vitamin D**

- Coefficient of Variance (CV) is a tool to compare variability of two different characteristics (eg. BP, serum creatinine, height weight etc.) in the same group of subjects or compare variability of the same character in two or more different groups.
- Thus it is a measure used to compare relative variability.
- For example, coefficient of variance measures
  - .. whether weight varies more than height in a group of student
  - ?. whether weight varies more in girls of boys.

**Calculation:**

- $CV = \text{standard deviation} \times 100 / \text{mean}$
- For Blood pressure-  $110 \times 100 / 11 = 1000$
- For Vitamin D-  $3 \times 100 / 18 = 16.7$

## 243. Broken ampula is thrown into which coloured bin?

a) Red

b) Yellow

c) Blue

d) Black

Correct Answer - C

**Ans. C. Blue**

### **COLOR CODING & TYPES OF CONTAINER:**

<b>Colour coding</b>	<b>Type of Container</b>	<b>Waste Category</b>	<b>Treatment options</b>
Yellow	Plastic Bags	Human and animal wastes, Microbial and Biological wastes and soiled wastes (Cat 1,2,3 and 6)	Incineration/ Deep Burial
Red	Disinfected container/ Plastic bags	Microbiological and Biological wastes, Soiled wastes, Solid wastes (Cat 3,6,7)	Autoclave/ Microwave/ Chemical Treatment)
Blue/ White/ Transparent	Plastic bag, Puncture proof container	Waste sharps and solid waste ( Cat 4 &7)	Autoclave/ Microwave/ Chemical Treatment Destruction and

			Shredding
Black	Plastic bag	Discarded medicines, Cytotoxic drugs, Incineration ash and chemical waste (Cat 5,9 & 10)	Disposal in secured land fills
Green	Plastic Container	General waste such as office waste, food waste & garden waste	Disposed in secured landfills

**244. Case control study was done regarding breast cancer & risk factors & odds ratio was obtained. Which of the following are causative factors ?**

Parameter	Case	Control	OR
Age at menarche>12	1714	2329	1.04
Menopause	1771	2408	1.53
OCP use	935	1105	1.02
Smoking	93	214	0.97
Family history	513	502	1.10
BMI>27.5	165	493	0.53
Breastfeeding	942	2514	0.56
Multiparity(2)	2778	3366	1.05

a) 6

b) 5

c) 3

d) 2

Correct Answer - B

**Ans. (B) 5**

- An **odds ratio (OR)** is a statistic that quantifies the strength of the association between two events, A and B.
- Two events are independent if and only if the OR equals 1: the odds of one event are the same in either the presence or absence of the other event.

- If the OR is greater than 1, then A and B are associated (correlated) in the sense that, compared to the absence of B, the presence of B raises the odds of A, and symmetrically the presence of A raises the odds of B.
- Conversely, if the OR is less than 1, then A and B are negatively correlated, and the presence of one event reduces the odds of the other event.
- Most Importantly Odds ratio does not demonstrate causality .
- But we can say that they are positively correlated. Since 5 Factors have odds ratio more than 1 so the answer will be B

**245. A study is to be conducted with regards to the fat content in the expressed breast milk of pre-term infants as compared to term infants. Which study design is best suited?**

a) Case control

b) Prospective cohort

c) Longitudinal study

d) Ambispective

Correct Answer - A

Ans. A. Since there is a comparison between fat content of EBM in preterm vs term infant the best study design will be, Case control. Prospective Cohort study will be appropriate if we want to see the change in the fat content of EBM in preterm infants.

## 246. Key indicator for AFP surveillance ?.

a) At least one case of non-polio AFP per year per 1000 population of under 5 years

b) At least one case of non-polio AFP per year per 100000 population of under 5 year

c) At least one case of non-polio AFP per year per 1000 population of under 15 years

d) At least one case of non-polio AFP per year per 100000 population of under 15 years

Correct Answer - D

**Ans.d) At least one case of non-polio AFP per year per 100000 population of under 15 years**

The number of AFP cases reported each year is used as an indicator of a country's ability to detect polio, even in countries where the disease no longer occurs.

### **Polio surveillance**

- It is the most important part of whole polio eradication initiative. It has two components:?
- Acute flaccid paralysis (AFP) surveillance
- Acute flaccid paralysis is defined as acute onset (< 4 weeks) of flaccid paralysis (reduced tone) without other obvious cause in children WHO recommends the immediate reporting and investigation of every case of AFP in children less than 15 years.

## 247. Transmission assessment survey (TAS) is done in the following?

a) To determine when infections have been reduced below these target thresholds

b) For assessing primary immunization coverage

c) To provide reliable estimates of birth rate, death rate and infant mortality rate

d) All

Correct Answer - A

**Ans.A. To determine when infections have been reduced below these target thresholds**

- WHO recommends the transmission assessment survey (TAS) to determine when infections have been reduced below these target thresholds and MDA can stop.
- Once MDA has stopped, TAS is used as a surveillance tool to determine that infection levels are sustained below target thresholds.
- Mass drug administration (MDA) is needed to reduce infection in the community to levels below a threshold at which mosquitoes are unable to continue spreading the parasites from person to person and new infections are prevented.

## 248. Denominator in perinatal mortality rate

- a) Total births
- b) Total live births
- c) Live births + Still birth
- d) Total number of newborns

Correct Answer - A

**Ans: A. Total births**

\* PERINATAL MORTALITY RATE is the sum of the number of resident fetal deaths of 28 or more weeks gestation plus the number of resident newborns dying under 7 days of age in a specified geographic area (country, state, county, etc.) divided by TOTAL BIRTHS includes the sum of the number of resident live births plus the number of resident fetal deaths of 28 or more weeks gestation for the same geographic area (for a specified time period, usually a calendar year) and multiplied by 1,000.

**249. Which of the following statements is true regarding for influenza vaccine**

a) Secondary attack rate 5 to 15%

b) Virus shedding present before the pt presents with symptoms

c) 1 to 5 years is high risk age group

d) Aquatic birds are reservoirs

Correct Answer - D

**Answer.D. Aquatic birds are reservoirs**

\* **RESERVOIR**: Humans are the principle **reservoir** of human **influenza A** viruses. The avian **reservoir** of **influenza A** viruses is wild birds, predominantly ducks, geese, and shorebirds.

\* Seasonal influenza tends to target children younger than 12 months of age and adults 65 years old or older.

\* **Secondary attack rates** were estimated at 10.3% (95% CI 6.8-14.7) for **secondary** cases with **influenza**-like illness and 20.2% (95% CI 15.4-25.6) for **secondary** cases with acute respiratory illness.

**250. Child has received full rabies vaccination in December 2018 and now presented with oozing wound on great toe and the pet had vaccination also, what would you do now?**

a) No vaccine

b) 2 doses of vaccine on day 0 and 3

c) Full 5 doses of vaccines

d) Rabies Ig and full vaccination

Correct Answer - B

**Answer B. 2 doses of vaccine on day 0 and 3**

**Two doses of vaccine on Day 0 & 3** should be administered to this boy.

This case is classified under WHO **category III** since the bleeding was present at the site of dog-bite(toe). This kid should receive PEP without any delay as his immunization was done more than 3 months ago.

**251. Which of the following is not a specific protection method under primary level of prevention?**

a) Tab rifampicin to those in contact with meningitis

b) Hand washing

c) Pentavalent vaccination

d) Wheat flour with added iron

Correct Answer - B

**Answer. B. Hand washing**

Handwashing is not a specific protection measure under primary prevention. All other options are protection measures against specific diseases.

**252. The best study to assess correct injection practices by health providers are?**

a) Interview pts

b) Interview health care provider

c) CCTV camera monitoring

d) Structured Observation & Checklist

Correct Answer - B

**Answer. B. Interview health care provider**

Training & interview concentrating on injection safety, guidelines to dispose biomedical waste and monitoring of the activity is needed.

**253. In India cause of death registration is assessed by – (Multiple correct)**

**A. SRS**

**B. Census**

**C. Lay information**

**D. Medical (certificate) records of cause of death**

a) a and b are correct

b) a, b and c are correct

c) b, c and d are correct

d) a, c and d are correct

Correct Answer - D

**Answer. D. a, c and d are correct**

\* Most cause of death reporting systems in developed countries rely on medical certification of the cause of death according to the International Classification of Death (ICD-10), and have achieved near-total coverage.

\* Developing countries such as India, where adequate medical facilities are not available, depend on lay reporting of the cause of death in rural areas, using a sample registration system.

\* The use of the cause of death statistics in India is questioned in view of the poor coverage, and poor compliance with guidelines for cause of death reporting, coding and classification.

**254. Mass Drug Administration is helpful is used/effective for all except**

a) Lymphatic Filariasis

b) Vit A Deficiency

c) Worm Infestation

d) Scabies

Correct Answer - D

**Answer. D. Scabies**

\* Mass chemoprophylaxis, i.e, chemoprophylaxis given to a large number of people, is recommended in yaws, pinta, bejel, trachoma, Vit A Deficiency, Worm Infestation, malaria and filaria.

**255. Match the following**

- 1. primary survey**
- 2. Secondary survey**
- 3. Definitive care**
- 4. Resuscitation**

**Other side-**

- 1. identify what can cause death**
- 2. identify other injuries**
- 3. treat what can cause death**
- 3. make a management plan**

a) 1-I, 2.-II, 3-IV, 4-III

b) 1-III, 2-I, 3-IV, 4- II

c) 1-II, 2.-I, 3-IV, 4-III

d) 1-II, 2-IV, 3-I, 4- III

Correct Answer - A

**Answer. A. 1-I, 2.-II, 3-IV, 4-III**

\* The **primary survey** is designed to **assess** and treat any life-threatening injuries quickly. It **should** be completed very rapidly.

\* The **secondary survey** is a rapid but thorough head-to-toe examination assessment to identify all potential injuries. It is helpful to determine the priorities for continued evaluation and management. It should be performed after the primary **survey**, and initial stabilization is complete

\* Definitive care includes ECG monitoring, diagnosis and treatment of cardiac dysrhythmias, defibrillation, and administration of

intravenous fluids and drugs.

**256. Reason & Assertion type:**

**(A): WHO recommends Typhoid vaccine in endemic areas**

**(R): Vaccines are Cost effective measures in endemic areas**

a) Both assertion reasons are true and reason is the correct explanation of the assertion

b) Both assertion reasons are true but reason is not the correct explanation of the assertion

c) Assertion is true but reason is false

d) Both are false

Correct Answer - B

**Ans. B. Both assertion reasons are true but reason is not the correct explanation of the assertion**

3 April 2018 - WHO recommends the introduction of typhoid conjugate vaccine (TCV) for infants and children over six months of age in typhoid-endemic countries.

**257. Reason & Assertion type:**

**(A): Malathion used as ULV during epidemic**

**(R): Malathion has residual effect**

- a) Both assertion reasons are true and reason is the correct explanation of the assertion
- b) Both assertion reasons are true but reason is not the correct explanation of the assertion
- c) Assertion is true but reason is false
- d) Both are false

Correct Answer - C

**Ans C. Assertion is true but reason is false**

Assertion is true but reason is false

ULV applications of malathion by aircraft can effectively control *Ae. aegypti* and can therefore be considered for use when epidemics occur.

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