# PSM-DERMA-ANESTHESIA

# EXTRA-EDGE

# PSM

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

A) Confounding

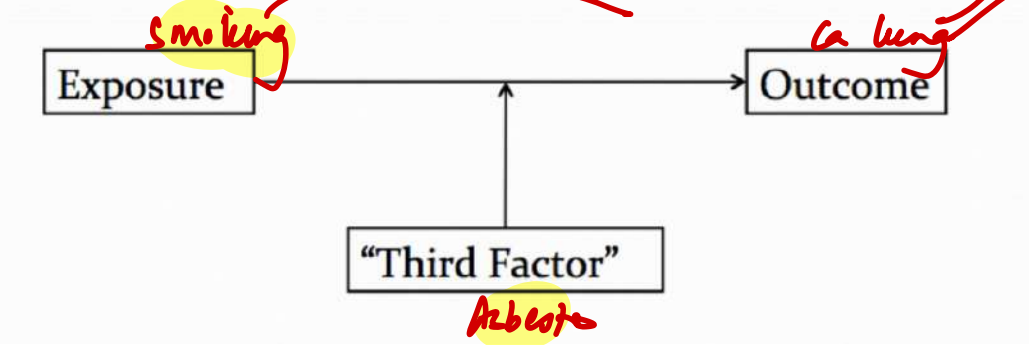
B) Effect modification

C) Latent period

D) Observer bias

# CONFOUNDING VS EFFECT MODIFICATION


Association disappears/weakens after stratification




Association was strong in one subgroup with weak/no association in the other subgroup.

**Best to eliminate known confounders:** Matching

**Known + Unknown:**

- Randomization
- Restriction
- Stratification
- Stratified randomization
- Multivariate analysis/ Statistical modelling

**Overall best for confounders:** stratified randomn.

Lead time bias

vs

D − B

Survival bias

Length time bias

. Longer latent period

↳ screening

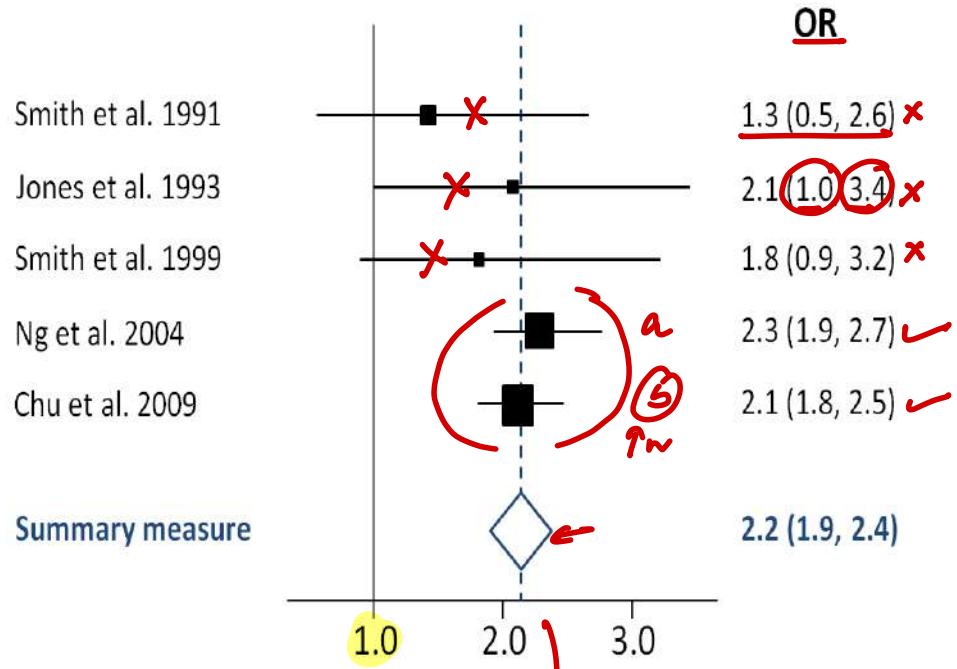
# 17. Which among the given statements is incorrect regarding the interpretation of these plots?

A) The diamond shows the overall pooled results

B) Each rectangle depicts a single study

C) The vertical dashed line is the "line of no effect"

D) The size of the rectangle denotes the sample size




- apples & oranges effect
- file drawer effect → missed data of individual study

"public" bias

CI = mean ± 2SE

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

↑n ↓SE

no effect

pooled estimate

**18. An investigator is conducting a randomized, double-blind, placebo-controlled intention-to-treat clinical trial of a new drug for the treatment of peripheral neuropathy in adults with multiple myeloma (MM). One hundred fifty patients with MM are enrolled in the trial and randomized to receive either the new drug (n = 75) or placebo (n = 75). Trial protocol requires that patients in both groups take 1 pill per day and keep a pain diary. After 3 months of treatment, each patient is interviewed, and the pain diaries are reviewed; 9 patients taking the new drug and 3 patients taking placebo did not take the pills as instructed. Which of the following best describes how the data pertaining to all patients who did not adhere to protocol should be treated?**

A) Conduct separate analyses of the 12 nonadherent patients and the 138 adherent patients

B) Exclude all 12 nonadherent patients from analysis

C) Exclude the 3 nonadherent patients in the group taking placebo from analysis

D) Keep all 12 nonadherent patients in their respective groups for analysis

| Feature | Intention-to-Treat (ITT) | Per-Protocol (PP) | As-Treated (AT) |
| --- | --- | --- | --- |
| **Who is analyzed?** | Everyone as randomized | Only those who **fully adhered** to the protocol | Based on **treatment actually received** |
| **Maintains randomization?** | ✅ Yes | ❌ No | ❌ No |
| **Risk of bias** | ✅ Low | ❌ High (selection bias) | ❌ High (confounding, selection bias) |

**30. Which of the following is not a measure of position?**

A) Z scores

B) Range

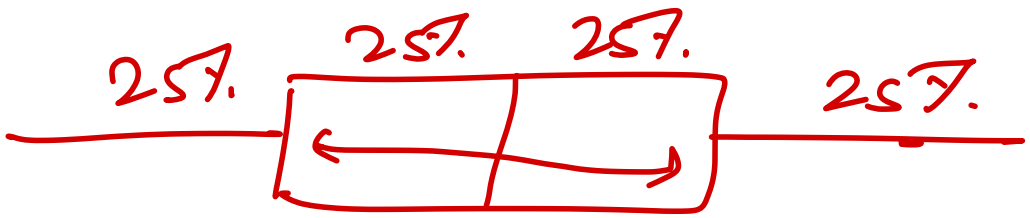
C) Centiles

D) Quantiles

| Measures Used in Statistics | Examples |
| --- | --- |
| **Measures of Location or Central Tendency** | Mean, median, mode |
| **Measures of Dispersion or Variability or Spread** | Range, interquartile range, variance, standard deviation |
| **Measures of Position** | Percentiles, quartiles, centiles, z-scores |

mean ± SD

$(SD)^2$




Q1 ↓ median Q2 Q3 = IQR

**32. Which of the following is not used to compare Kaplan Meir survival curves?**

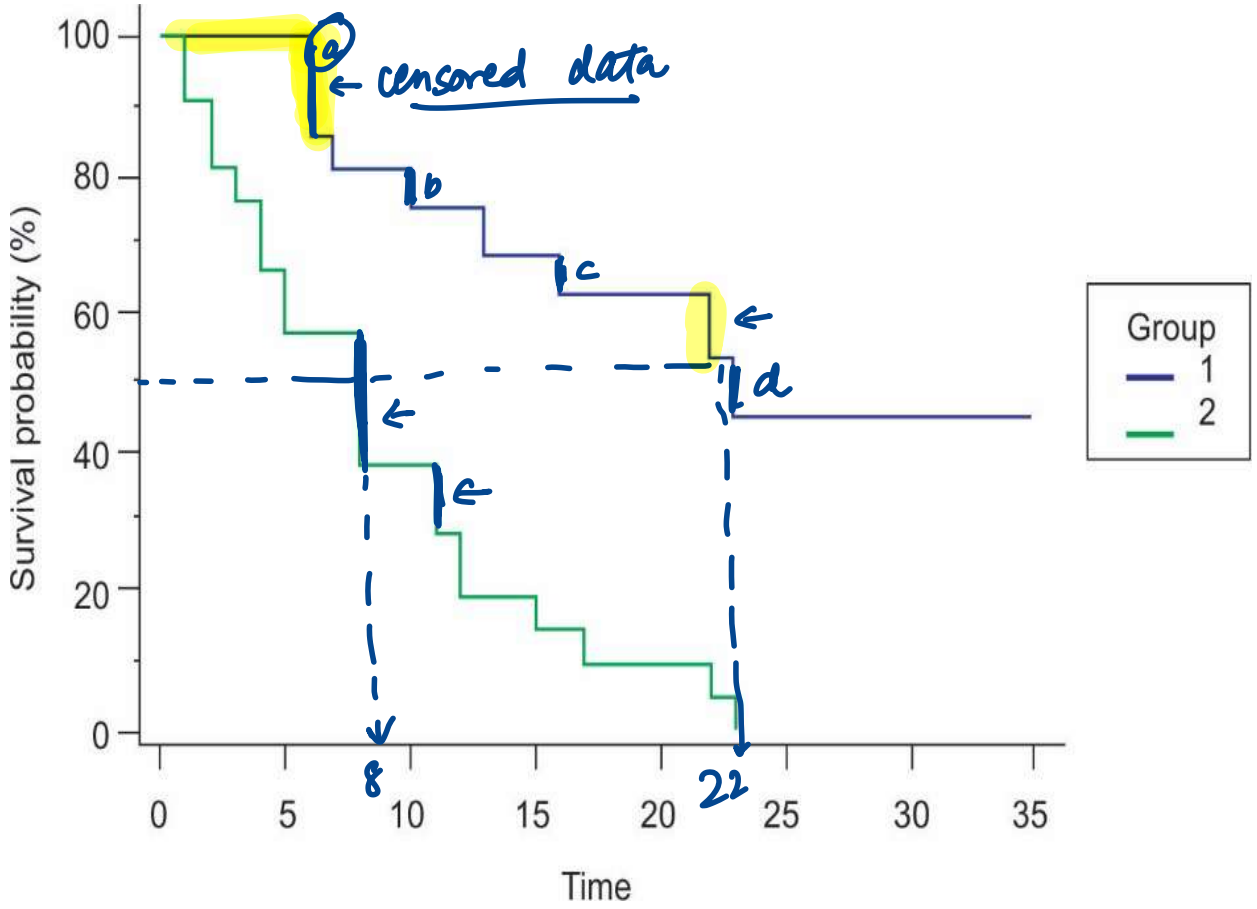
A) Mantel-Haenszel test

B) Log-rank test

C) Cox regression

D) Friedmann test

# Kaplan-Meir survival analysis




- median survival of gop 1
- censored data

**40. A study calculated the correlation coefficient between smoking and lung cancer incidence as 1.4. What does this result indicate?**

A) Weak correlation

B) Moderate correlation

C) Strong correlation

D) Mistake in calculation

Pearson

r: 0 - 1

weak — stronger

OR / RR

RR = 1 → no assn

> 1 → Caus"

< 1 ⇒ protective

+

Cause

−

protect

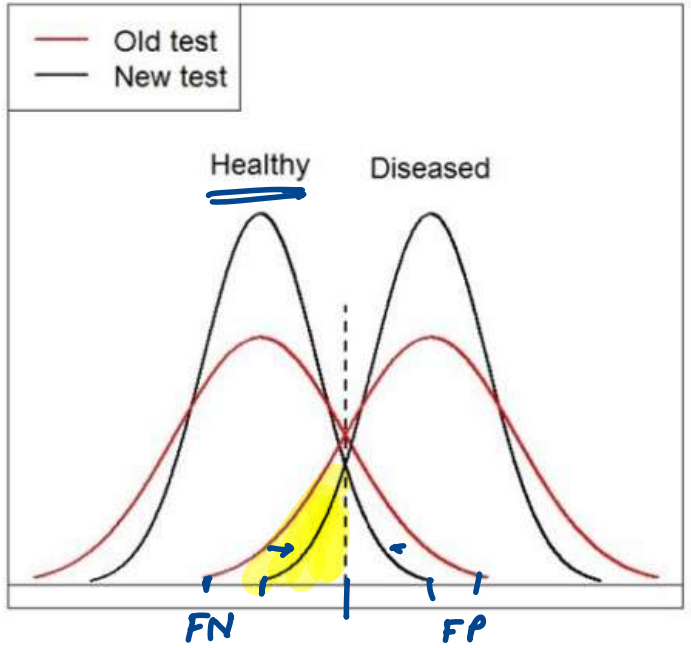
**46. A standard test based on a serum marker is used to diagnose disease X. The distribution of the marker for this standard test in healthy and diseased patients is shown by the red curves in the graph below. A competitive company developed a new test based on the same marker. The distribution of the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

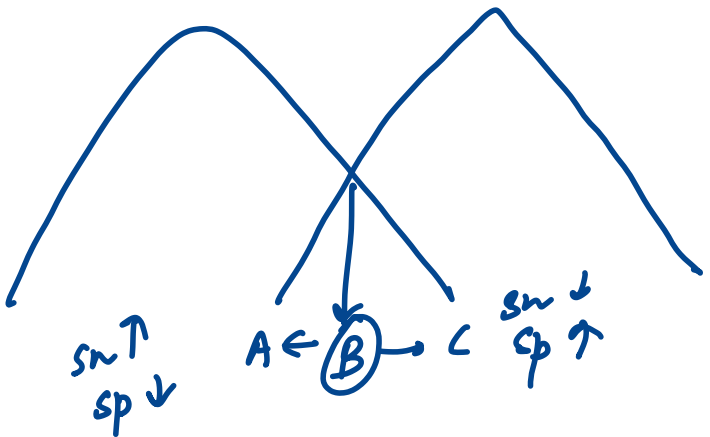
A) Higher sensitivity and lower specificity

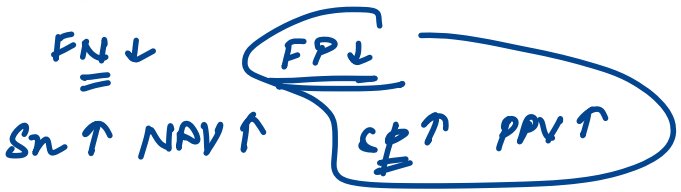
B) Higher sensitivity and higher specificity

C) Higher sensitivity and the same specificity

D) Lower sensitivity and higher specificity



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

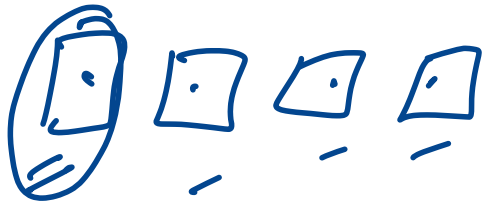
0.95 x 0.95 - - -

A) 0.05 x 8

B) 0.95 x 8

C) 0.05 (raised to power 8)

D) 0.95 (raised to power 8)



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

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

**45. Out of a family of 4 members, one of them developed influenza infection. Four days later, 2 other members developed the same. What is the secondary attack rate?**

A) 50%

B) 33%

~~C)~~ 66%

D) 75%

attack rate = new cases / popⁿ at risk × 100

(Incidence (info)

$\frac{2}{3} \times 100$

SAR = exposed in 1ip / popⁿ at risk - CONTACTS × 100

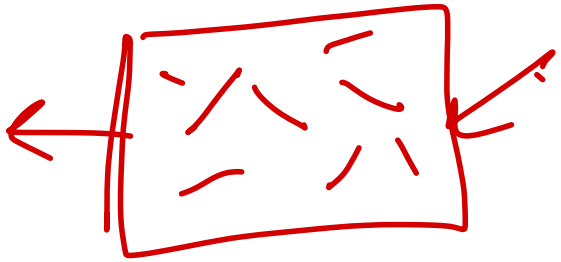
**33. In the context of Hardy-Weinberg equilibrium, which of the following factors does not affect the genetic equilibrium of a population?**

A) Small population
B) Random mating
C) Mutations
D) Gene outflow

Stable

Exceptions to Hardy-Weinberg law

- Small and dynamic populations
- Non-random or assortative mating
- Mutations
- Gene outflow and genetic drift
- Migration



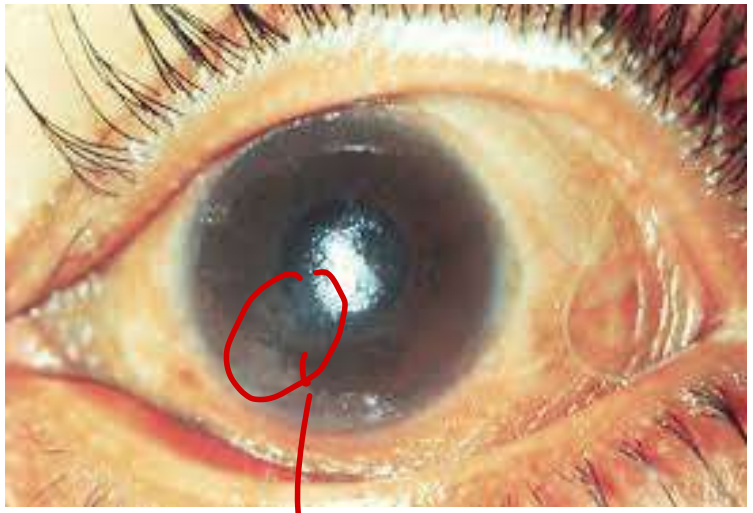
**47. A 10-year-old boy with complaints of dry, itchy eyes and night blindness had the following ophthalmic finding as given in the image. What is the stage of vitamin A deficiency as per WHO classification?**

A) Stage X1B

B) Stage X3

C) Stage X2

D) Stage XF



| Stage | Features |
|---|---|
| XN | Night blindness |
| X1A | Conjunctival Xerosis |
| X1B | Bitot's spots |
| X2 | Corneal xerosis |
| X3A | Corneal ulceration affecting < 1/3 of the corneal surface |
| X3B | Corneal ulceration affecting > 1/3 of the corneal surface |
| XS | Corneal scar |
| XF | Xerophthalmic fundus |

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

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

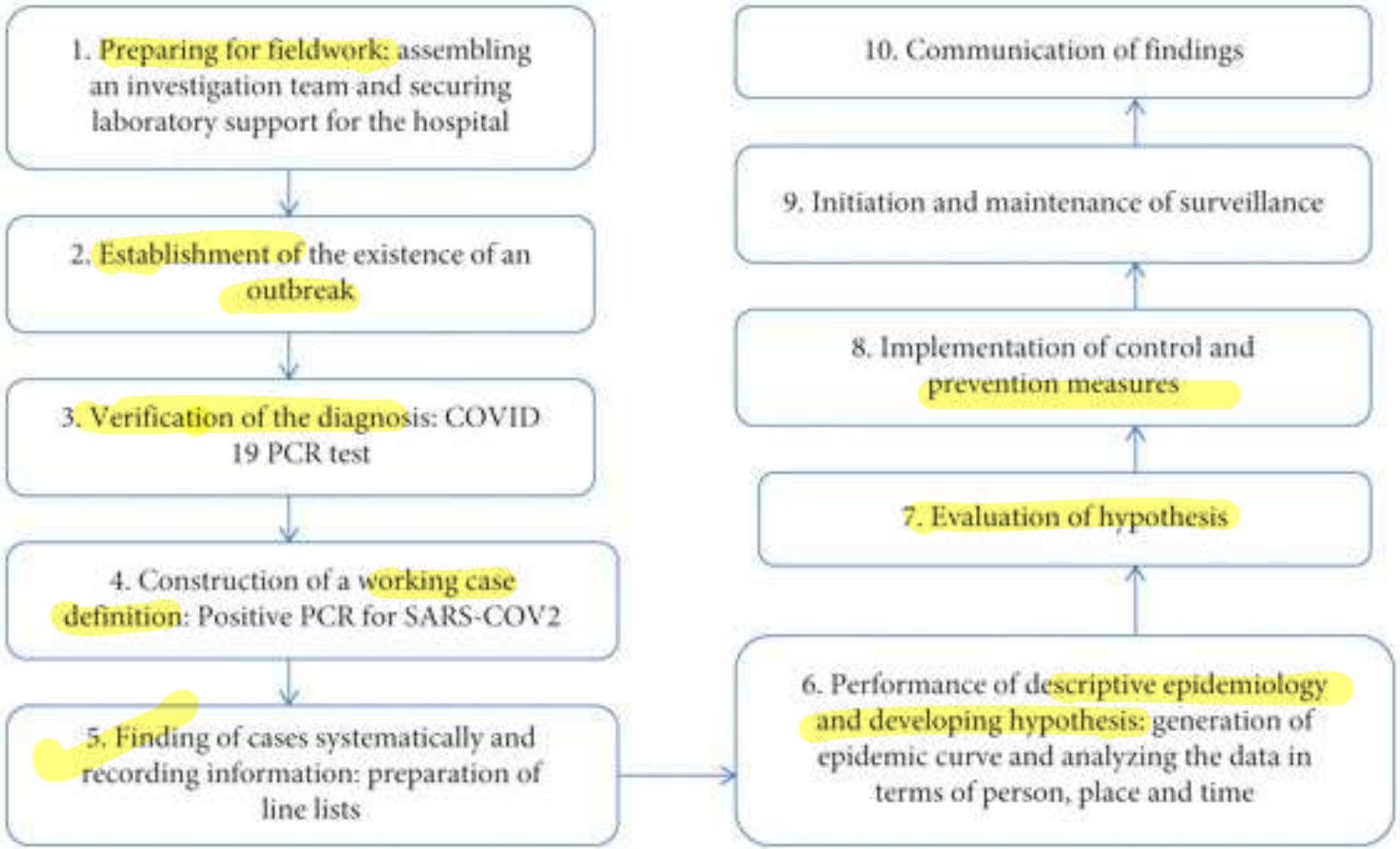
Options;

A) 1 → 3 → 2 → 5 → 4

B) 2 → 5 → 1 → 4 → 3

C) 1 → 2 → 5 → 3 → 4

D) 2 → 1 → 4 → 5 → 3


1. Preparing for fieldwork: assembling an investigation team and securing laboratory support for the hospital
2. Establishment of the existence of an outbreak
3. Verification of the diagnosis: COVID 19 PCR test
4. Construction of a working case definition: Positive PCR for SARS-COV2
5. Finding of cases systematically and recording information: preparation of line lists
6. Performance of descriptive epidemiology and developing hypothesis: generation of epidemic curve and analyzing the data in terms of person, place and time
7. Evaluation of hypothesis
8. Implementation of control and prevention measures
9. Initiation and maintenance of surveillance
10. Communication of findings

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

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

Options;

A) 1-2-3-4

B) 3-4-1-2

C) 3-1-4-2

D) 2-3-4-1

Technique of interview

1. ESTABLISHING CONTACT
2. STARTING AN INTERVIEW
3. SECURING RAPPORT
4. RECALL
5. PROBE QUESTIONS
6. ENCOURAGEMENT
7. GUIDING THE INTERVIEW
8. RECORDING
9. CLOSING THE INTERVIEW
10. REPORT

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

A) Detection of VDPV in a case of Acute Flaccid Paralysis

B) Detection of a single case of wild polio in a person with Acute Flaccid Paralysis

C) Detection of any cVDPV infected individuals

D) Detection of wild PV infection in a healthy asymptomatic individual

r VDPV — c VDPV

AFP — 4-30 d of OPV

4-75 d of OPV

deficit residual weakness → 60 d

OPV → MC : P2 → OPV switch.

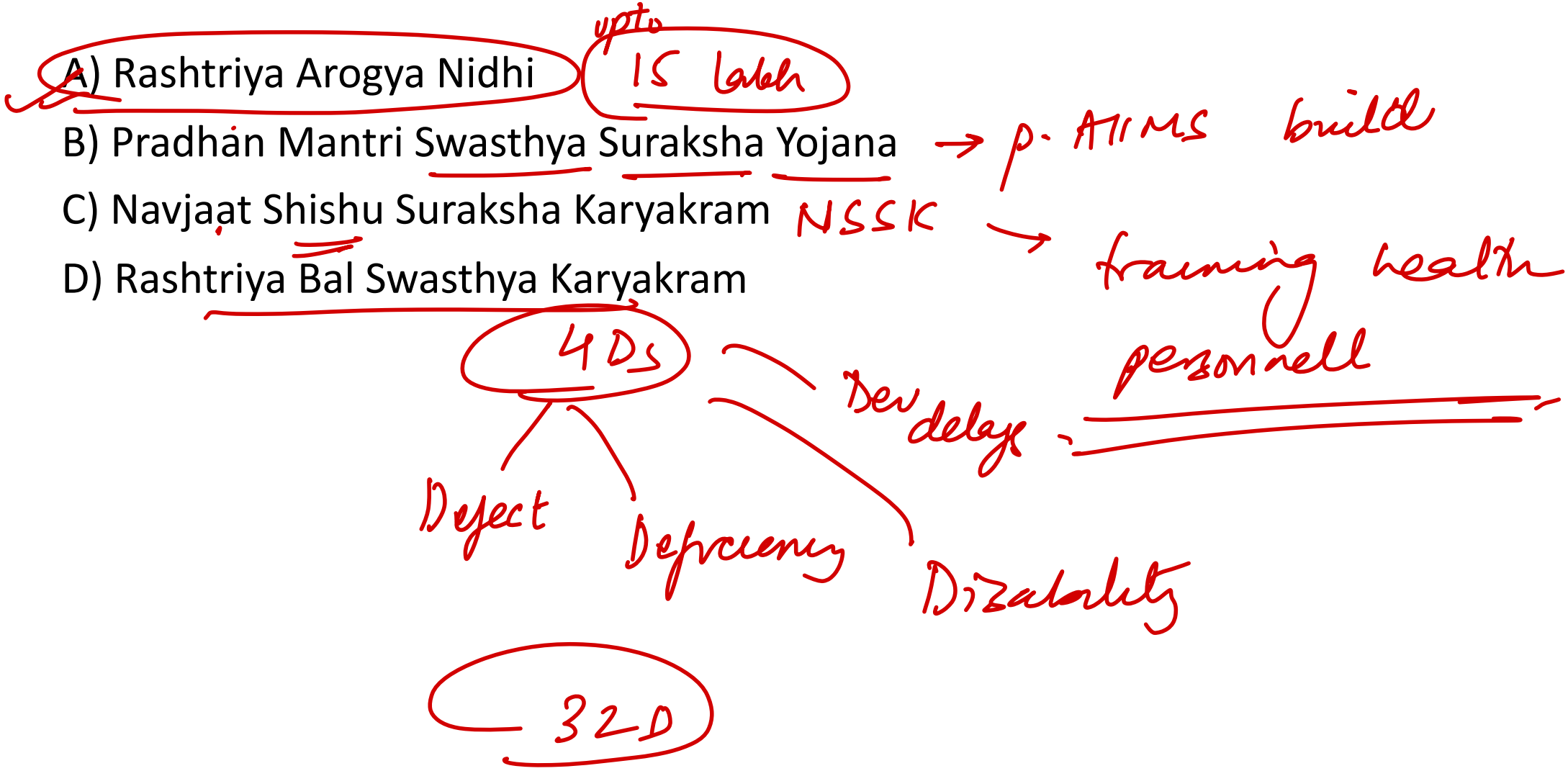
**25. Which health program in India would provide financial aid to BPL families to help manage a child with major life-threatening diseases?**

A) Rashtriya Arogya Nidhi

B) Pradhan Mantri Swasthya Suraksha Yojana

C) Navjaat Shishu Suraksha Karyakram

D) Rashtriya Bal Swasthya Karyakram



# GOBI-FFF – UNICEF

G-Growth monitoring
O-Oral rehydration
B-Breast feeding
I-Immunization
F-Family planning
F-Food supliments
F-Female education

Vandemataram scheme → PNT – logo – depot – ORS/ANC IFA
Kilkari – ANC – Phone calls – reminders
Mission Parivarik Vikas – Contraceptive
RAJIV GANDHI SHRAMIK KALYAN YOJNA: contributed under the scheme for two or more years, is entitled to claim unemployment allowance equal to **50% of wage for a maximum period of up to two years during the lifetime.**

**27. Identify the correct statements?**

**1.Procaine will not dose readjustment in a case of liver failure**

**2.Meta-zoonoses are transmitted biologically by invertebrate vectors**

**3.Gueldels airway is measured from tip of nose to angle of mandible**

**4.Dextran 40 is the best colloid for microvascular expansion**

Options;

A) 1, 2, 3, 4

B) 1, 2, 4

C) 3, 4

D) 1, 3, 4

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

**Anthropozoonoses:** Rabies, plague, hydatid

**Zooanthroponoses:** TB to cattle

**Amphixenosis:** T.cruzi, S.japonicum

## Types of Transmission in Vectors

**1. Propagative**

- only multiplies in the vector and there is no change in form.
- **Example:** Plague bacilli in rat fleas.

**2. Cyclo-propagative**

- The agent changes in both form and number.
- **Example:** Malarial parasites in mosquitoes.

**3. Cyclo-developmental**

- The agent undergoes only developmental changes and not multiplication.
- **Example:** Microfilaria in mosquitoes.

**4. Transovarial**

- Infectious agent is transmitted vertically in the vector, from parent to progeny.
- **Example:** Rickettsia rickettsii in ticks.

**5. Transstadial**

- The infectious agent stays with the vector from one stage of its life cycle to the next.
- **Example:** Borrelia burgdorferi in ticks.

# 31.What is the use of the following instrument?

A) Humidity of air

B) Mean radiant temperature

C) Cooling power of air

D) Maximum temperature reached

**34. Identify the correct statements?**

**1. Rabies is an example of amphixenosis**

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

**3. Aeration tank is the heart of the activated sludge process**

**4. Multiple tube method is done for detecting the presence of coliform organisms in a sample of water**

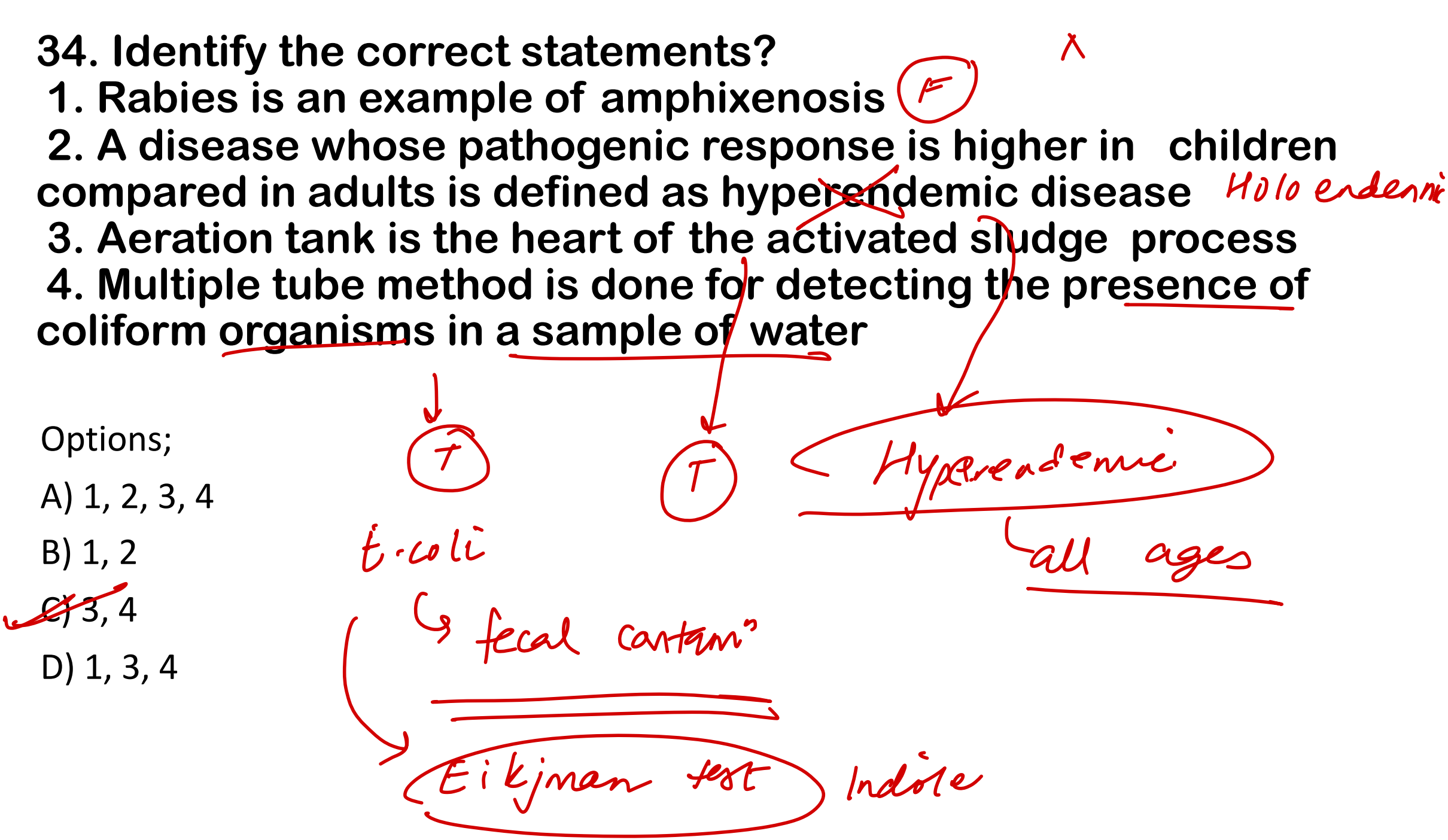
Options;

A) 1, 2, 3, 4

B) 1, 2

C) 3, 4

D) 1, 3, 4



**39. Which of the following is not an organophosphate insecticide?**

A) DDT

B) Fenthion

C) Malathion

D) Diazinon

## I. CONTACT POISONS

### 1.Natural:

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

### 2.Synthetic

**A. Organo-chlorine Compounds:**

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

**B. Organo-phosphorus Insecticides:**

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

**C. Carbamates:**

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

**D. Synthetic Pyrethroids:**

- Resmethrin
- Bioresmethrin
- Pothrin

## II. STOMACH POISONS

- Paris green
- Sodium fluoride

## III. FUMIGANTS

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

## IV. REPELLENTS

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

DEET

# INTEGRATED VECTOR CONTROL

QQ

## ANTI-LARVAL MEASURES

URBAN

**Chemical:**
Paris green= Stomach poison
Temephos/Abate = Contact poison

**Biological**: Gambisia / Guppy
Bacillus thuringiensis

Environmental control most eff.

## ANTI-ADULT MEASURES

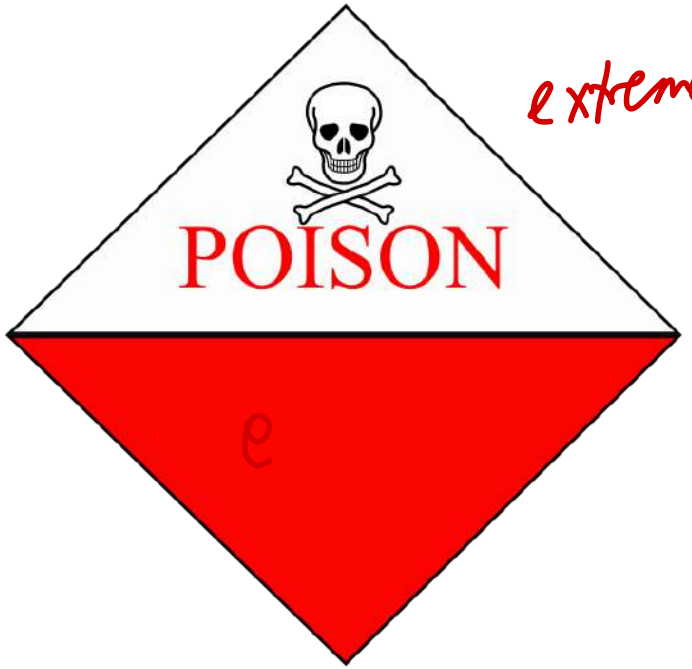
RURAL

Space spray: LOW API
Malathion
Cyphenothrin
Pyrethrum

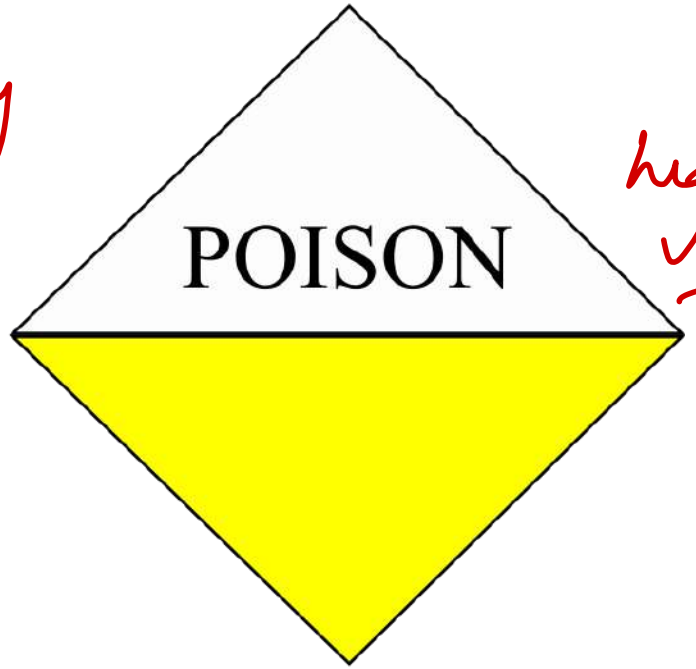
Residual spray: HIGH API
DDT (2 rounds) R
Malathion (3 rounds) R
Deltamethrin (2 rounds)

## PERSONAL PROTECTION

Deltamethrin
-ITBN: 6mon
-LLIN:3yrs API >5
0.0475inch
>150 holes/ich

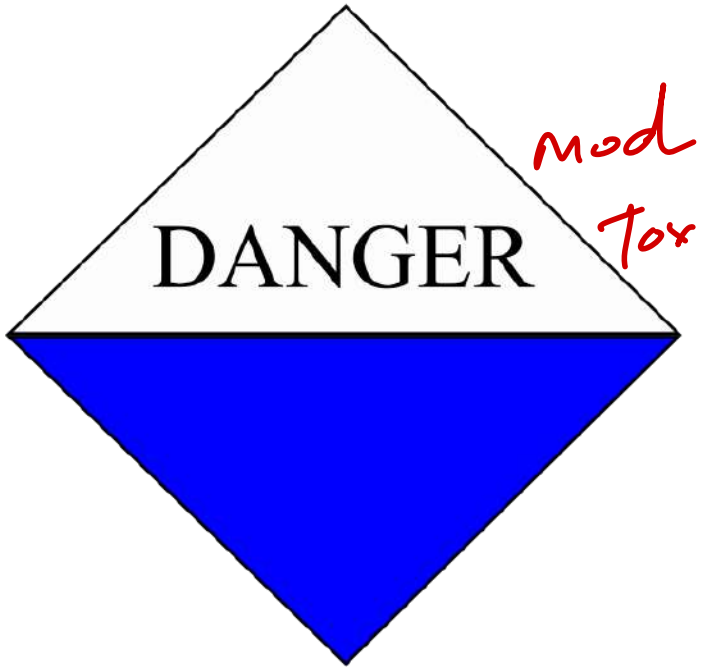



extremely

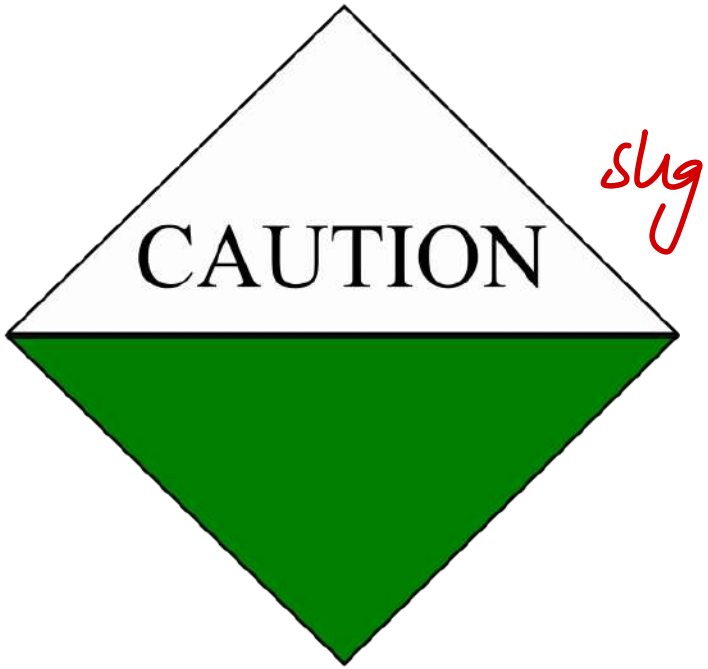



highly Toxic

Insecticides




mod Toxic




slightly Toxic

# 41. Identify the correct statement:

A) The states with API <1 and all their districts reporting API <1 are in the elimination phase

B) NPU is the best for protein quality

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

D) Perflation ventilation is a type of mechanical ventilation

**Mechanical Ventilation:**

- **Exhaust ventilation** → remove stale air
- **Plenum ventilation** → forceful blowing air
- **Balanced ventilation.** Exhaust + Plenum
- **Air conditioning**

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

**16. A 2 month old child comes to the OPD with complaints of fever, pain and fluctuant swelling at the Left upper limb where he recently received a vaccine. Which of the following steps should be done in the treatment of this child?**

A) Incision and drainage

B) Conservative Management

C) Systemic INH therapy

D) First line ATT

HHE: DPT

CI? No

Encephalopathy: DPT whole pertussis xx Inconsolable cry -DPT

CI? DT / DaPT Not a CT

Disseminated BCG infection/ Osteomyelitis: 1-12mon, M.bovis

Injection site abscess: IBD DPT / DaPT

LN swelling:

BCG → Local ATT

→ $R_0$ – ATT

**19. A physician is assessing the body composition of patients using various anthropometric indices. Which of the following indices can he measure without height?**

A) Quetelet index = BMI $kg/m^2$

B) Broca index Wt = Ht − 100

C) Ponderal's index — $g/cm^3$

D) Corpulence index

**1. Body Mass Index (BMI)= Quetelet index**

BMI = Weight (kg) / [Height (m)]$^2$

**2. Ponderal Index**

PI = Height (cm) / (Cube root of Body Weight (kg))

**3. Brocca Index**

Ideal Weight = Height (cm) - 100

**4. Lorentz's Formula**

For Men:

Ideal Weight = Height (cm) - 100 - (Height (cm) - 150)/4

For Women:

Ideal Weight = Height (cm) - 100 - (Height (cm) - 150)/2

**5. Corpulence Index**

CI = Actual Weight / Desirable Weight

Should not exceed 1.2

6. Skin fold thickness: Mid triceps/ Biceps/ subscapular/ suprailiac

Sum <40mm males/50mm females

**15. Which of the following should be administered to the newborn born to a mother found to have HBsAg positive at labour?**

A) Hepatitis B vaccine + Immunoglobulin

B) HBIG

C) Hepatitis B vaccine only

D) Immunoglobulin, followed by vaccine at 6 weeks

Ig + VACCINÉ

- Hep B-Needle-prick/ Newborns of Hep B mothers
- Tetanus
- Rabies Cat III Ig – local
- Varicella: IC /Newborn 5d before/ 2d after delivery/Pregnancy: Ig
- Measles: IC/ Infants exposed <6d ago

There are currently four types of VVM, chosen to match the heat sensitivity of the vaccine. These four types are VVM2, VVM7, VVM14 and VVM30. The VVM number is the time in days that it takes for the inner square to reach the colour indicating a discard point, if the vial is exposed to a constant temperature of 37°C.

# 8. All of the following apply to health propaganda except

A) Knowledge and skills instilled in the minds

B) Reflective behavior is promoted

C) Appeals to emotion

D) Process is information centered

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

# 14. Which of the following is not a vital statistic?

A) Birth rate

B) Fertility rate

C) Dependency ratio

D) Life expectancy at birth

Popul$^{n}$ statistics

**Vital Statistics include:**

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

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

A) 1000 mg and 1000 mg

B) 1000 mg and 1200 mg

C) 1200 mg and 1200 mg

D) 1200 mg and 1000 mg

## Summary of RDA for Indians – 2020

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

* Adequate Intake (AI)

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

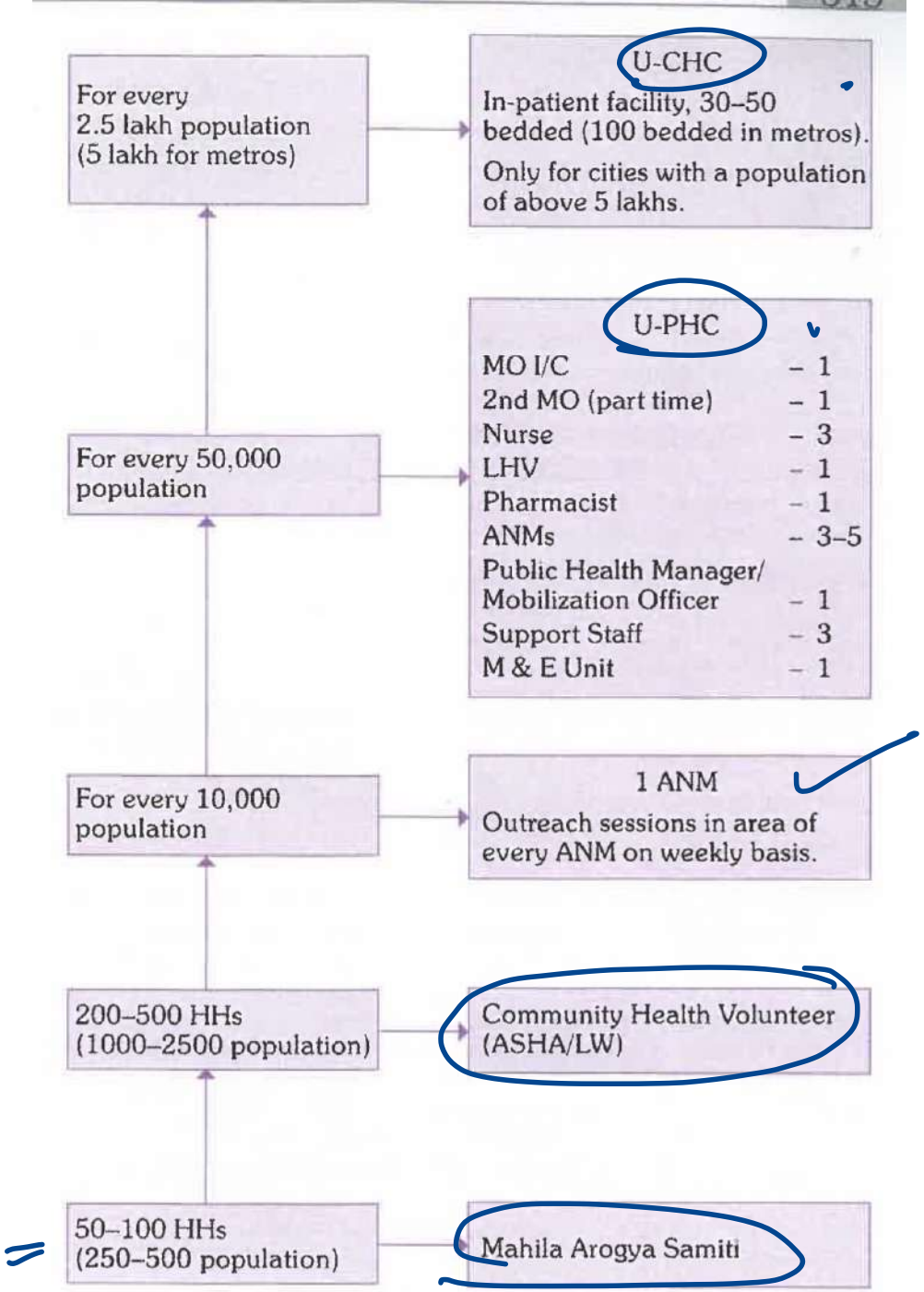
1. **Urban Primary Health Centre**
2. **Urban Community Health Centre**
3. **Auxiliary Nurse Midwife**
4. **Urban Social Health Activist**
5. **Mahila Arogya Samiti**

A) 3, 1, 2, 4, 5

B) 1, 2, 3, 4, 5

C) 5, 4, 3, 1, 2

D) 2, 1, 3, 4, 5


For every
2.5 lakh population
(5 lakh for metros)
U-CHC
In-patient facility, 30–50 bedded (100 bedded in metros).
Only for cities with a population of above 5 lakhs.
For every 50,000 population
U-PHC
MO I/C – 1
2nd MO (part time) – 1
Nurse – 3
LHV – 1
Pharmacist – 1
ANMs – 3–5
Public Health Manager/ Mobilization Officer – 1
Support Staff – 3
M & E Unit – 1
For every 10,000 population
1 ANM
Outreach sessions in area of every ANM on weekly basis.
200–500 HHs
(1000–2500 population)
Community Health Volunteer
(ASHA/LW)
50–100 HHs
(250–500 population)
Mahila Arogya Samiti

# Which of the following is true about hot fermentation method?

a) It is an aerobic process

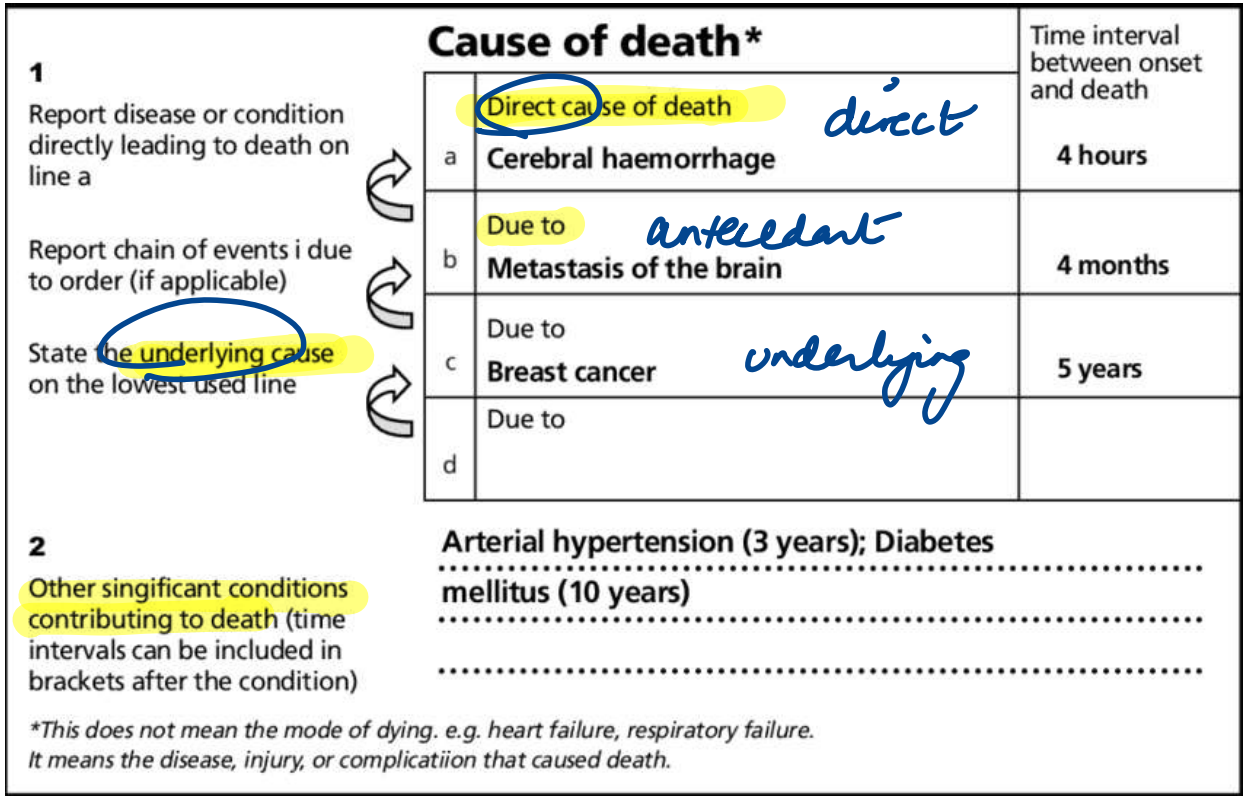
b) The trenches are of depth 2 meters

c) It is also known as Bangalore method

d) Decomposition is complete in 1 month

Most satisfactory method for refuse disposal:

| 🔑 Feature | Rapid Sand Filter (RSF) | Slow Sand Filter (SSF) | Memory Trick |
|---|---|---|---|
| **Space** | Very little space | Large area | **R → Room-saving** |
| **Rate of filtration** | 200 m.g.a.d (Fast) | 2–3 m.g.a.d (Slow) | **R → Rapid, S → Slow** |
| **Sand size** | 0.4–0.7 mm (Coarser) | 0.2–0.3 mm (Finer) | **R → Rougher sand** |
| **Pre-treatment** | Chemical coagulation | Plain sedimentation | **R → Requires chemicals** |
| **Washing** | Back-washing | Scraping | **R → Reversible wash (backwash)** |
| **Skill** | Highly skilled | Less skilled | **R → Requires experts** |
| **Loss of head** | 6–8 ft | 4 ft | - |
| **Turbidity removal** | Good | Good | - |
| **Colour removal** | Good | Fair | - |
| **Bacteria removal** | 98–99% | 99.9–99.99% | **S → Superior Safety** |



**Cause of death***

| | | Time interval between onset and death |
|---|---|---|
| 1 Report disease or condition directly leading to death on line a | a Direct cause of death: **Cerebral haemorrhage** | **4 hours** |
| Report chain of events i due to order (if applicable) | b Due to: **Metastasis of the brain** | **4 months** |
| State the underlying cause on the lowest used line | c Due to: **Breast cancer** | **5 years** |
| | d Due to: | |

2 Other singificant conditions contributing to death (time intervals can be included in brackets after the condition): **Arterial hypertension (3 years); Diabetes mellitus (10 years)**

*This does not mean the mode of dying. e.g. heart failure, respiratory failure.
It means the disease, injury, or complicatiion that caused death.

direct

antecedant

underlying

Impairment – lose hand

Disability inability to write

Handicap educn xx

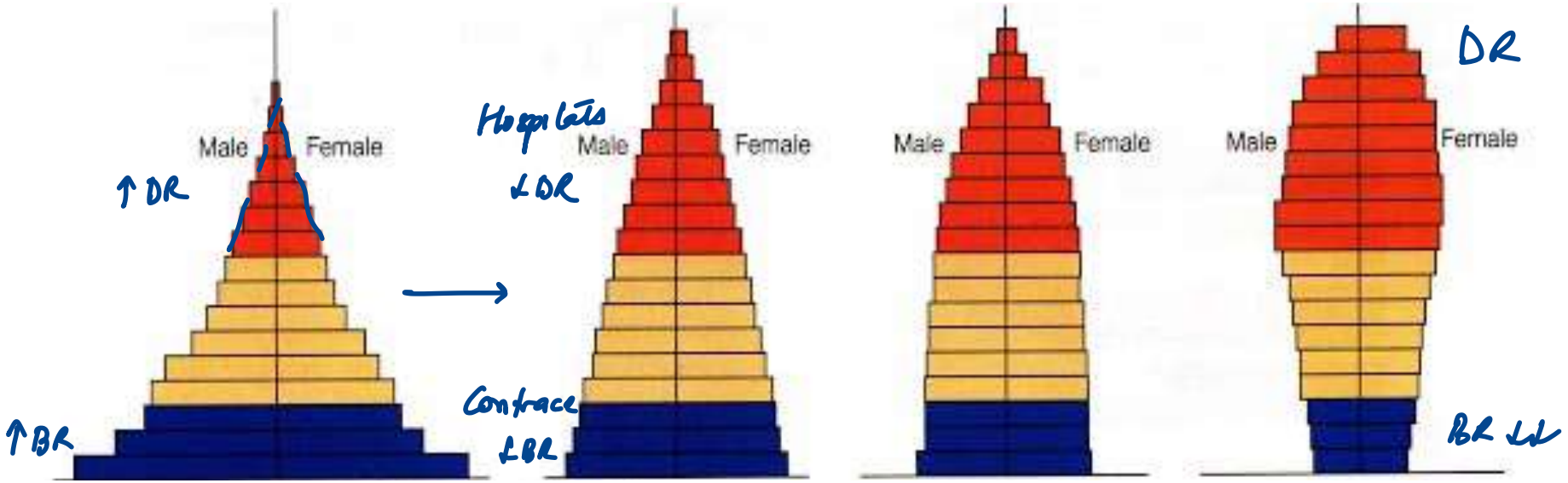
Most dangerous particles: 0.5 – 3 µ

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

| Stage | Key Words |
| --- | --- |
| 1. Awareness | Interest |
| 2. Motivation | Evaluation, Decision-making |
| 3. Action | Adoption / Acceptance |

| Category | Comments |
| --- | --- |
| *Water-borne diseases* | Caused by the ingestion of water contaminated by human or animal faces or urine containing pathogenic bacteria or viruses; includes cholera, typhoid, amoebic and bacillary dysentery and other diarrhoeal diseases. |
| *Water-washed diseases* | Caused by poor personal hygiene; includes scabies, trachoma and flea-, lice-, and tick-borne diseases, which are also water-washed. |
| *Water-based diseases* | Caused by parasites found in intermediate organisms living in water; includes dracunculiasis, schistosomiasis and some other helminths. |
| *Water-related diseases* | Transmitted by insect vectors which breed in water; includes dengue, filariasis, malaria, onchocerciasis, trypanosomiasis and yellow fever. |

# Population pyramids




developing

early developed

late developed



expanding → stationary → constricting

# DERMA

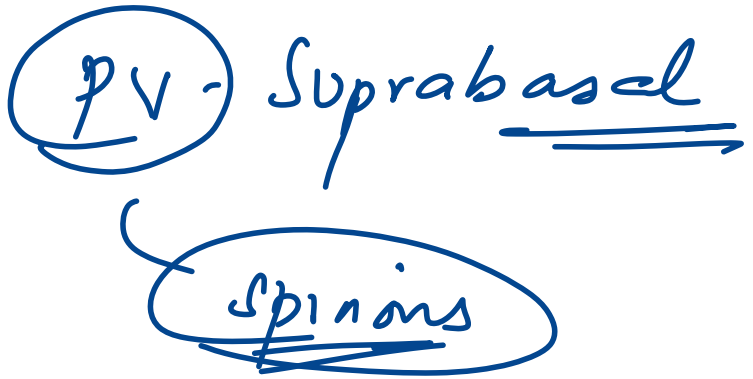
# 13. Which of the following are included in malpighian layer of the epidermis?

A) Stratum corneum and stratum granulosum

B) Stratum granulosum and stratum spinosum

C) Stratum granulosum and stratum lucidum

D) Stratum spinosum and stratum basale



**38. Which of the following histopathological findings is characteristic of acute eczema?**

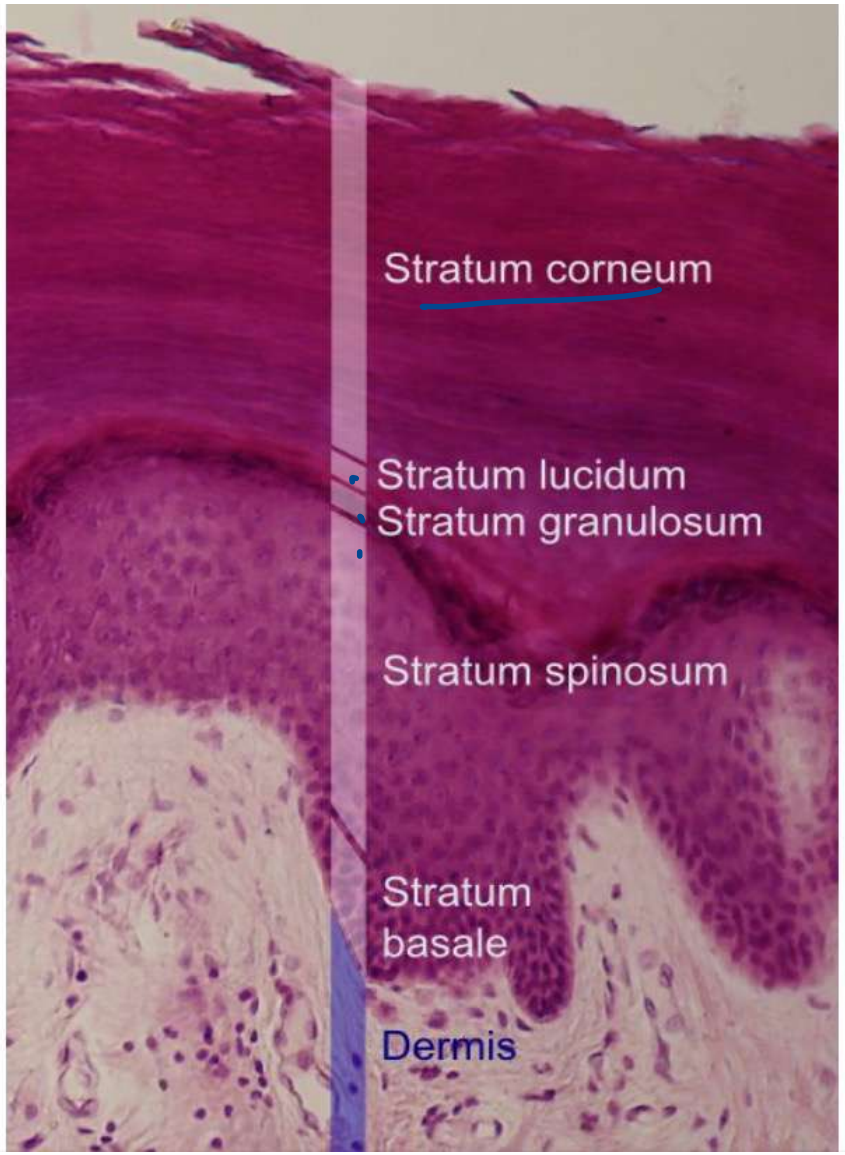
A) Parakeratosis

B) Hyperkeratosis

C) Intercellular edema

D) Intracellular edema

# DERMATO-PATHOLOGY




**Hyperkeratosis:** Ps, LP / Verruca / Calluses (Thickening)

**Parakeratosis:** PEARS → Ps / eczema / AK / SK / Sq cc (Nuclei retained)

AK → premalign Sq cc

**Orthokeratosis:** Hyper - Para

**Dyskeratosis:** AK / Sq cc / Darier / Bowen's

AN premature keratin

**Hypergranulosis:** LP (Wickham Striae)

**Spongiosis:** Intercellular edema - eczema

(vs intracellular - HSV - ballooning)

**Acanthosis:** Spinosus thickening → AN / Psoriasis

**Acantholysis:** Pemphigus / HSV

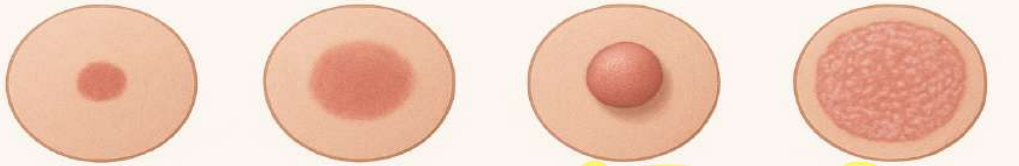
**Munro's microabscess:** Ps

**Pautrier's microabscess:** Mycosis

**Civatte bodies:** LP

# SKIN LESIONS

## PRIMARY LESIONS



**Macule**
Flat discoloration ≤ 1 cm in diameter

**Patch**
Flat discoloration > 1 cm in diameter

**Papule**
Elevated, solid skin lesion ≤ 1 cm

**Plaque**
Elevated, flat-topped lesion > 1 cm in diameter

| | |
|---|---|
| **Nodule** | Firm, deep lesion, > 1 cm |
| **Tumor** | Large solid mass, deeper in dermis |
| **Vesicle** | Small fluid-filled blister, ≤ 1 cm |
| **Bulla** | Large fluid-filled blister, ≥ 1 cm |
| **Pustule** | Pus-filled vesicle |
| **Wheal** | dermal edema – urticaria |

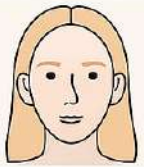
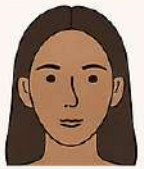
## SECONDARY LESIONS

**Scale**
Thickened stratum corneum

**Lichenification**
Thickened, rough skin with accentuated skin markings

| | |
|---|---|
| **Crust** | Dried serum, bloob, or pus |
| **Erosion** → | Loss of part of the epidermis, heals without scar |
| **Ulcer** → | Full-thickness loss of epidermis and dermis, heals with scar |
| **Excoriation** | Linear erosion caused by scratching |

# Fitzpatrick Skin Type Classification

| TYPE | SKIN COLOR | REACTION TO SUN EXPOSURE | EXAMPLES |
|---|---|---|---|
| I |  | Very fair, pale | Northern Europeans |
| II |  | Usually burns, tans minimally | Northern/ Central Europeans |
| III |  | Sometimes burns, tans uniformly | Southern Europeans, Middle Eastern |
| IV |  | Rarely burns tans easily | Mediterranean Hispanic, some Asians |
| V |  | Very rarely burns, tans very easily | Middle Eastern South Asians some African descent |
| VI |  | Never burns, tans profusely | Sub-Saharan African Afro-Caribbean |

Sun burn

tan

pheo

pseudo

orange-red.

Eumelanin → true brown

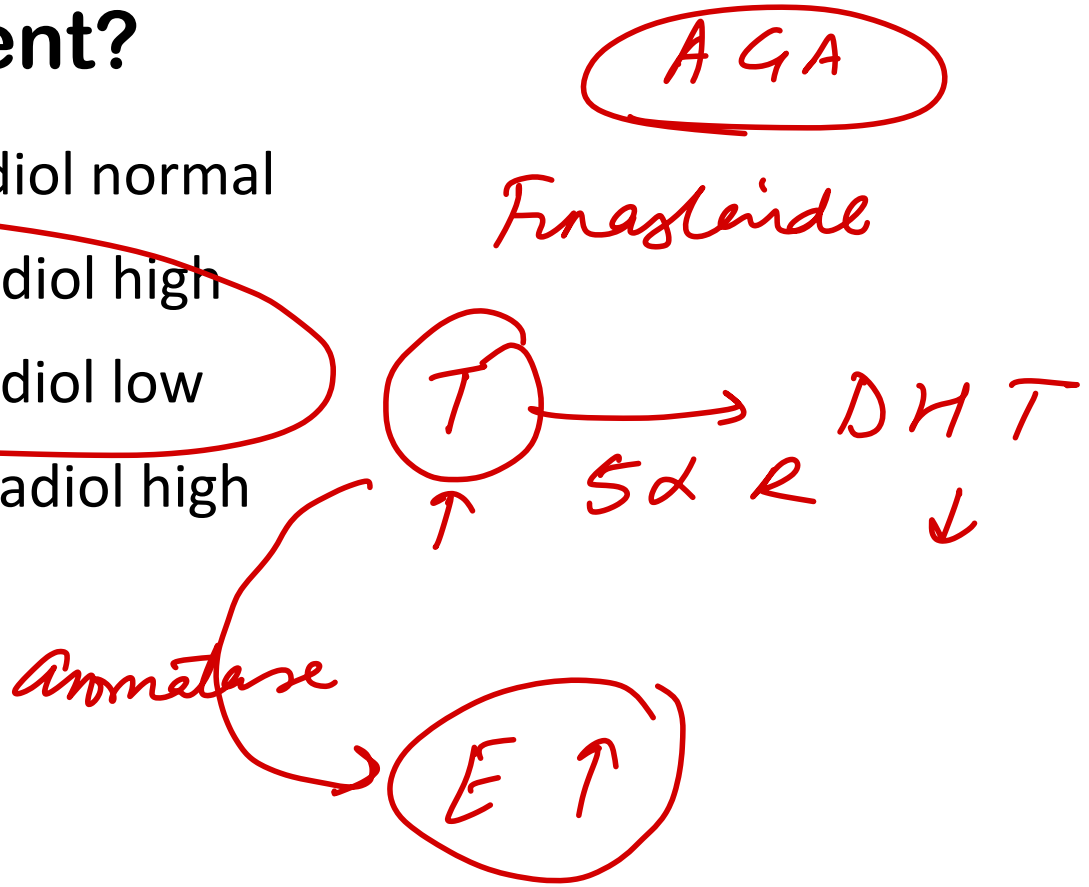
**23. A 28-year-old man comes to the OPD to discuss hair loss. He has hair loss primarily around the temples, which began insidiously 3 years ago. Physical examination shows moderate thinning of hair at the anterior scalp, temporal region, and vertex. An oral medication is prescribed to treat the hair loss. After the initiation of therapy, which of the following changes would most likely occur in this patient?**

A) Testosterone low, Dihydrotestosterone low, Estradiol normal

B) Testosterone high, Dihydrotestosterone low, Estradiol high

C) Testosterone high, Dihydrotestosterone low, Estradiol low

D) Testosterone high, Dihydrotestosterone high, Estradiol high



# 29. Which of the following statements is false regarding this condition?

A) Seen in photoexposed areas

B) Increased number of melanocytes are seen

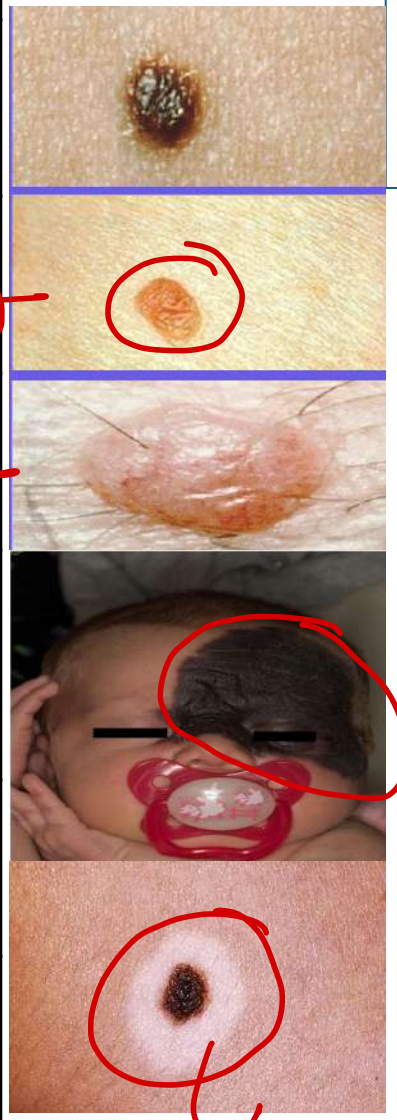
C) It is associated with xeroderma pigmentosa

D) It is caused by increased melanin

Freckles

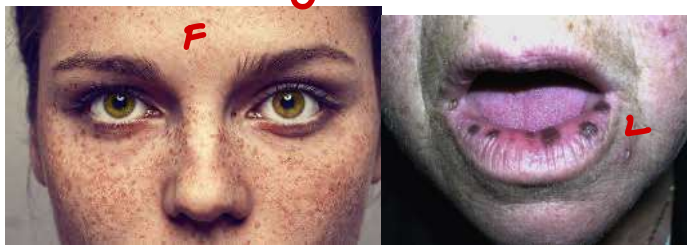
# PIGMENTATION DISORDERS

| Type | Clinical Features | Histopathology |
|---|---|---|
| **Junctional Nevus** | Flat, uniformly pigmented macule | Nests of melanocytes at the dermoepidermal junction |
| **Compound Nevus** | Slightly elevated papule, uniformly pigmented | Nests of melanocytes at both dermoepidermal junction and dermis |
| **Intradermal Nevus** | Dome-shaped papule, flesh-colored or lightly pigmented | Melanocytes entirely within the dermis |
| **Congenital Melanocytic Nevus (CMN)** Giant : >20 cm | Present at birth, may have hair, large variants have malignancy risk hair ++ | Melanocytes in dermis, sometimes deep into subcutaneous fat or around adnexa ↑ melanoma |
| **Halo Nevus** | Central pigmented nevus with surrounding depigmented halo | Lymphocytic infiltration around nevus cells |
| **Dysplastic (Atypical) Nevus** | Irregular border, color variation, may resemble melanoma | Architectural disorder, cytologic atypia of melanocytes, bridging of rete ridges |




Freckles (Ephelides): melanocyte activity ↑

Lentigines: melanocyte no. ↑.




Spitz nevus : spindles

**35. A 29-year-old man is evaluated for a skin rash involving his hands, feet, and scalp for the last 2 weeks. The rash is mildly pruritic and has progressively worsened. The patient has a history of HIV and is not adherent with antiretroviral therapy. Skin examination shows erythematous patches with scales and crusting. Biopsy of the rash as shown below. Which of the following is the most appropriate treatment for this patient?**

A) Systemic acyclovir

B) Systemic terbinafine

C) Topical glucocorticoid

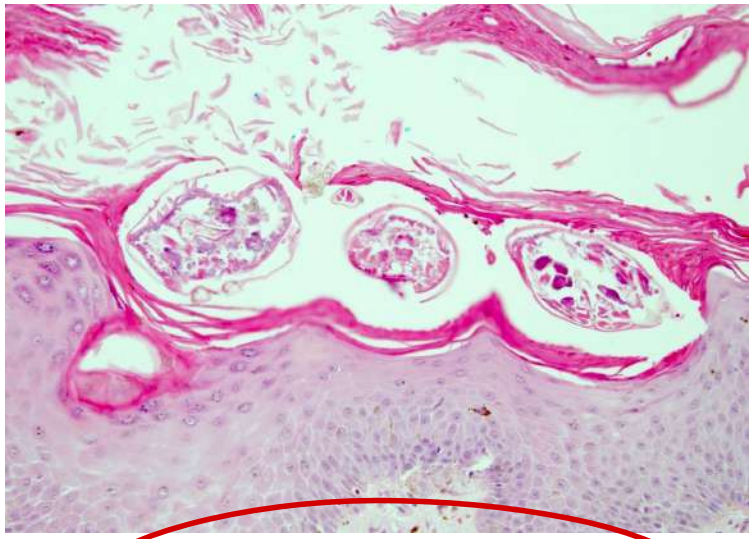
D) Topical permethrin

Norwegian

Scabies

millions

Ivermectin



10-15 miles

| Treatment | Dosage | Advantages | Disadvantages/contraindications |
|---|---|---|---|
| Sulphur | 2–10% precipitate in petroleum base | Safe for infants, pregnant and lactating women; inexpensive | Noxious and malodorous, and may cause skin irritation; multiple treatments required; lack of safety and efficacy data |
| Crotamiton | 10% ointment | Safe for infants; reported antibacterial and antipruitic activity; low toxicity; well tolerated | Clinical efficacy questionable; multiple treatments required; resistance reported |
| Benzyl benzoate | 25% ointment | Effective; inexpensive | Can cause severe skin irritation; contraindicated in pregnant women and infants |
| Lindane | 1% lotion or cream | Effective; inexpensive | Can cause numbness, cramps, dizziness, seizures in children; contraindicated in pregnant women and infants; resistance reported; withdrawn in several countries owing to neurotoxicity concerns |
| Permethrin | 5% cream | Effective; well tolerated; safe | May rarely cause skin irritation; expensive; resistance reported |
| Ivermectin | Oral, 200 µg/kg | Broad-spectrum antiparasitic; convenient; few side effects | Contraindicated in pregnant women and infants (owing to current lack of safety data); optimal dose regimen uncertain; expensive; resistance reported |

**36. All of the following result in an exacerbation of acne, except:**

A)Carbamazepine

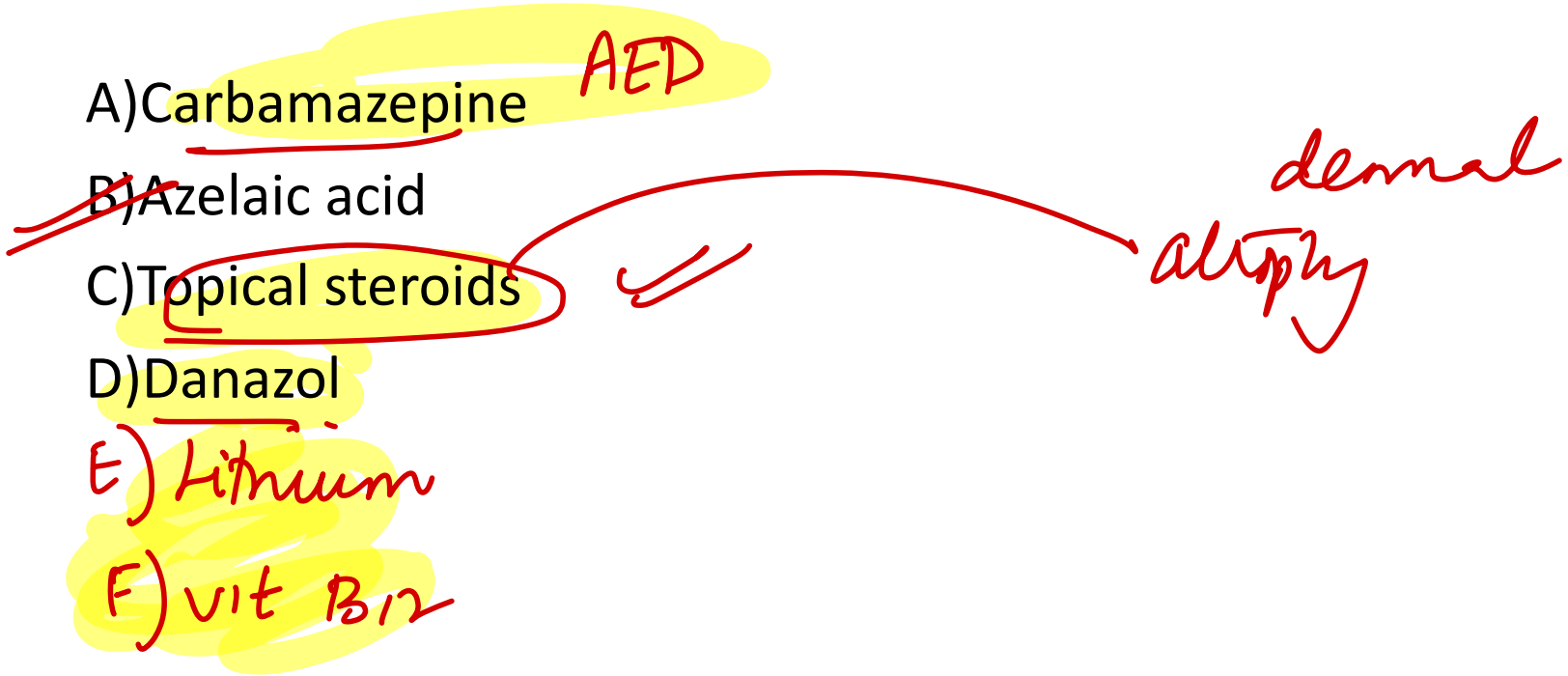
B)Azelaic acid

C)Topical steroids

D)Danazol

E) Lithium

F) vit $B_{12}$



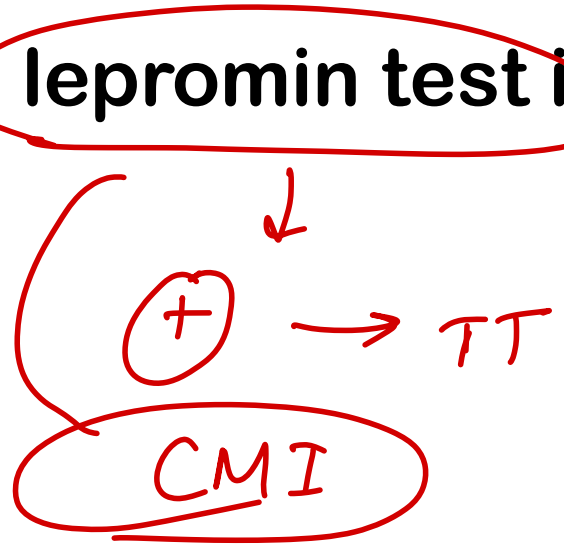
**12. The Fernandez reaction of lepromin test is read at:**

A) 12 hours

B) 24 hours

C) 48 hours

D) 21 days




SS → + → LL

1. **Fernandez Reaction** (early reaction):
    1. **Type IV hypersensitivity reaction**
    2. **Read at 48 hours**
    3. Indicates prior sensitization to *M. leprae*
2. **Mitsuda Reaction** (late reaction):
    1. Read at **21 days**
    2. Indicates long-term cell-mediated immunity and correlates with **tuberculoid leprosy**

**7. An 18-month-old boy with a known history of atopic dermatitis is brought to the emergency department with worsening facial rash and fever for 2 days. His parents state that he had an eczema flare recently for which they applied an over-the-counter steroid cream. Shortly after, he developed painful vesicles that spread rapidly over the cheeks. Which of the following is the most likely causative agent?**

A) Herpes simplex virus

B) Methicillin-resistant Staphylococcus aureus

C) Methicillin-sensitive Staphylococcus aureus

D) Varicella zoster virus

eczema herpeticum

**43. Arrange the following corticosteroids in the order of increasing t1/2 (low to high).**

1. **Dexamethasone**
2. **Hydrocortisone**
3. **Betamethasone**
4. **Prednisolone**

A) 3, 4, 1, 2

B) 2, 3, 4, 1

C) 2, 3, 1, 4

D) 2, 4,1, 3

| Category | Drug | Effect of anti-inflammation (ratio)* | Equivalent dose(mg)* | Plasma half-life (min.) | Duration of action(h) |
|---|---|---|---|---|---|
| Short-acting | Hydrocortisone | 1 | 20 | 90 | 8-12 |
| | Cortisone | 0.8 | 25 | 30 | 8-12 |
| Mid-acting | Prednisone | 3.5 | 5 | 60 | 12-36 |
| | Prednisolone | 4.0 | 5 | 200 | 12-36 |
| | Methylprednisolone | 5.0 | 4 | 180 | 12-36 |
| | Triamcinolone | 5.0 | 4 | >200 | 12-36 |
| Long-acting | Dexamethasone | 30 | 0.75 | 100-300 | 36-54 |
| | Betamethasone | 25-35 | 0.6 | 100-300 | 36-54 |

**44. A 43-year-old man comes to the clinic for evaluation of a healed forehead laceration. On examination, the scar is pink, firm, and mildly raised, without surrounding erythema or edema; it does not extend beyond the initial wound borders. The patient is reassured that the scar should flatten over the following months. The process by which this occurs relies mostly on enhanced cellular production of which of the following?**

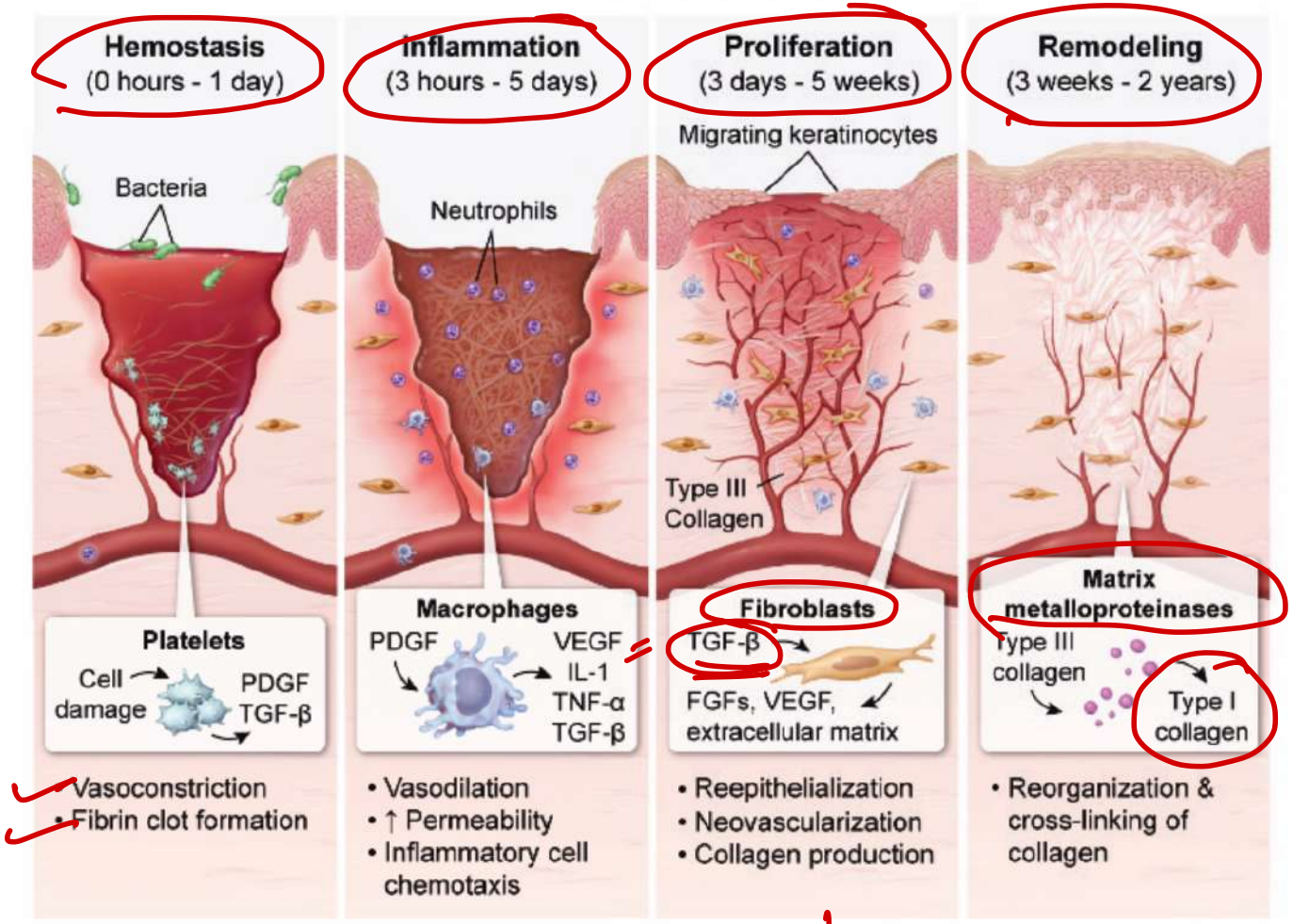
A) Metalloproteinases

B) Plasminogen activator → early

C) Reactive oxygen species → inflam

D) Tumor necrosis factor-alpha → inflammm

## Phases of wound healing




MMP

neutrophils
mpges

coll III → coll I

# ANESTHESIA

# 9. Identify the defective enzyme in a patient whose dibucaine number was 20.

A) Acetylcholinesterase

B) Monoamine oxidase

C) Catechol-O-methyltransferase

D) Butyrylcholinesterase

•**Dibucaine** is a local anesthetic that inhibits normal butyrylcholinesterase. The **dibucaine number** reflects how much enzyme activity is inhibited by dibucaine.

A **dibucaine number of <30** indicates a **homozygous abnormal variant** of **butyrylcholinesterase**, leading to **prolonged paralysis** after administration of **succinylcholine and mivacurium**

↳ ↳ atypical pseudocholin

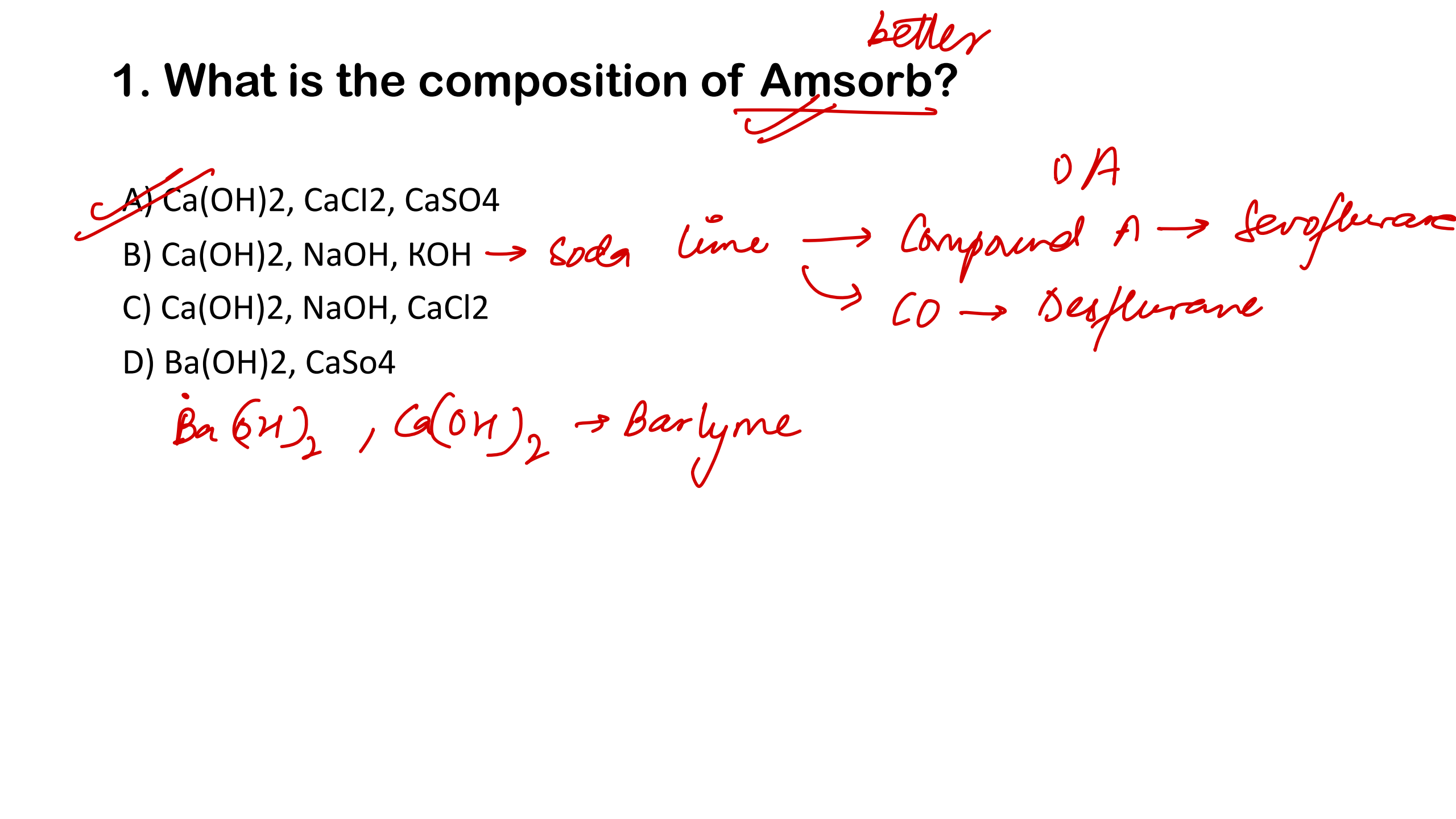
# 1. What is the composition of Amsorb?

A) Ca(OH)2, CaCl2, CaSO4

B) Ca(OH)2, NaOH, KOH

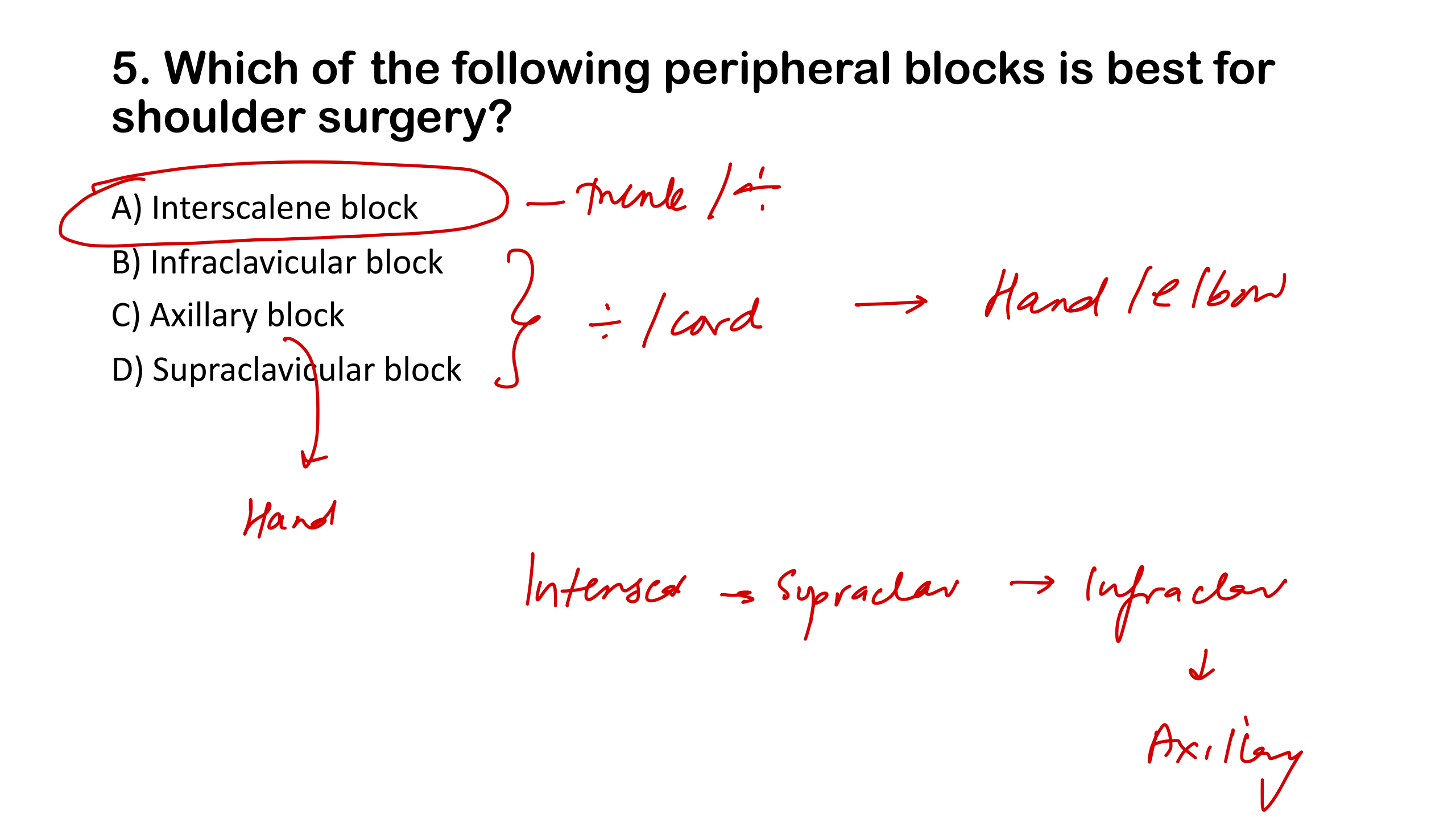
C) Ca(OH)2, NaOH, CaCl2

D) Ba(OH)2, CaSo4



**5. Which of the following peripheral blocks is best for shoulder surgery?**

A) Interscalene block
B) Infraclavicular block
C) Axillary block
D) Supraclavicular block



**6. What is the size of the endotracheal tube and blade to be used for resuscitation of a preterm neonate with weight 1.8 kg not responding to PPV?**

A) Size 0 blade, 3 mm tube

B) Size 1 blade, 2.5 mm tube

C) Size 0 blade, 2 mm tube

D) Size 1 blade, 1.5 mm tube

SIZE OF LMA
Child: 3
Female: 4
Male: 5

-1

SIZE OF Laryngoscope
Preterm-o
Term-1
Children-2
Female-3
Male-4

Size of ET tube
Low-pressure, high-volume cuff
<1000g baby-2.5mm
1-2kg baby-3mm
>2kg-3.5mm
Child-3-4
Female:7mm
Male: 8mm

$$ET = 4 + \frac{age}{4}$$

## Tube Sizes in Pediatric

| Types of tubes | Formula | 4 Y | Unit |
|---|---|---|---|
| Endotracheal tube (uncuffed) | ETT = **4 + (age/4)** | 5 | mm |
| NG or OG tube | NG = **2 x ETT** | 10 | French |
| Foley tube | Foley = **2 x ETT** | 10 | French |
| ETT depth (from incisor) | Depth = **3 x ETT** | 15 | cm |
| Chest tube (max size) | Chest tube = **4 x ETT** | 20 | French |

Note 1: Minus the ETT size by 0.5 mm if cuffed tubes are used.
Note 2: Do not use cuffed ETT in neonates.

**11. Which of the following cylinders can be used in patients with acute exacerbation of bronchial asthma along with oxygen?**

A) Violet

B) Blue - entonox

C) Brown

D) Orange - cyclopropane

Heliox

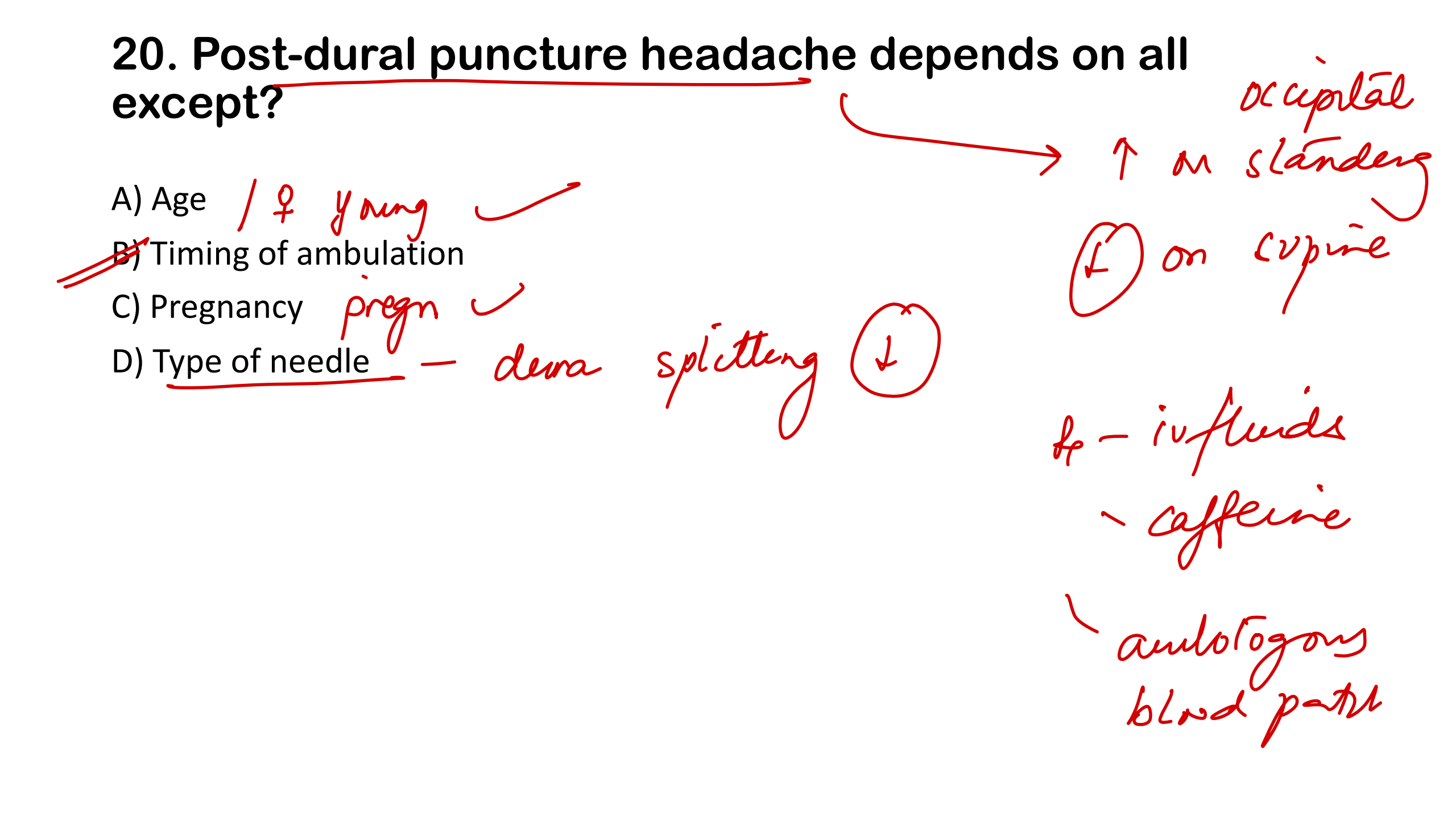
($He + O_2$)

↓ density

↓ bronchospasm

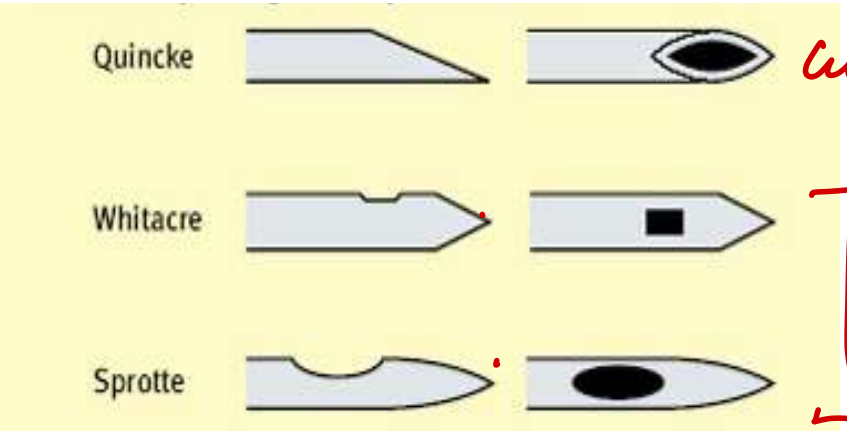
**20. Post-dural puncture headache depends on all except?**

A) Age
B) Timing of ambulation
C) Pregnancy
D) Type of needle



**Factors That Can Increase the Incidence of Headache After Spinal Puncture**

- Age
- Sex
- Needle size
- Needle bevel
- Pregnancy
- Dural punctures



**21. You are planning to wean a patient off mechanical ventilation. Which of the following is not a criterion to do so?**

A) Tidal volume more than 5 ml/kg

B) Vital capacity more than 5 ml/kg

C) Minute ventilation of less than 10L/min

D) Rapid Shallow Breathing Index (RSBI) < 105

| Parameter | Weaning Threshold (Acceptable) |
|---|---|
| **$PaO_2/FiO_2$ ratio** | > 200 |
| **PEEP** | ≤ 5–8 cm $H_2O$ |
| **$FiO_2$** | ≤ 40–50% |
| **pH** | ≥ 7.30 |
| **Tidal Volume (VT)** | ≥ 5 ml/kg |
| **Vital Capacity (VC)** | ≥ 10–15 ml/kg |
| **Minute Ventilation (VE)** | ≤ 10 L/min |
| **Respiratory Rate (RR)** | < 30 breaths/min |
| **Max Inspiratory Pressure (MIP)** | ≤ -20 to -30 cm $H_2O$ |
| **Rapid Shallow Breathing Index (RSBI)** | < 105 (f/Vt)<br>f = respiratory rate, Vt = tidal volume (L) |

**24. An elderly man with ca pancreas is receiving intravenous opioids for pain management. Which of the following drugs can be safely administered to him because of ceiling effect on respiratory depression?**

A) Morphine

B) Buprenorphine

C) Fentanyl

D) Methadone

N A V E L — Epi IV, Lignocaine, vasopressin
Naloxone, Atropine

**Drugs given via ET route**

x ceiling

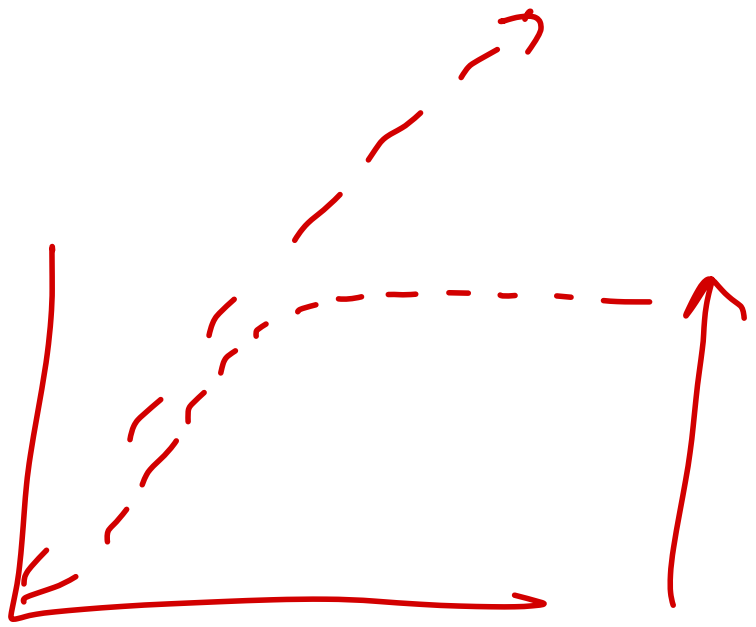
**Full agonist: Morphine, Pethidine, Heroin, Meperidine, Methadone, Codeine, Fentanyl**

**Partial agonist: Buprenorphine**

**Mixed agonist/antagonist: Nalbuphine, Pentazocine, Butorphanol**

→ ceiling effect

**Antagonist:**



**26. The presence of which structure is responsible for infants to be able to breathe simultaneously while suckling milk?**

A) Small tongue

B) Small soft palate

C) High larynx

D) Small pharynx

| Feature | Child | Adults |
| --- | --- | --- |
| **Position** | C3–C4 | C5–C6 |
| **Epiglottis** | Omega-shaped | Leaf-shaped |
| **Thyroid cartilage** | Flat | Angulated |
| **Larynx** | Conical | Cylindrical |
| **Laryngeal cartilages** | Soft and collapsible | Hard and ossified |

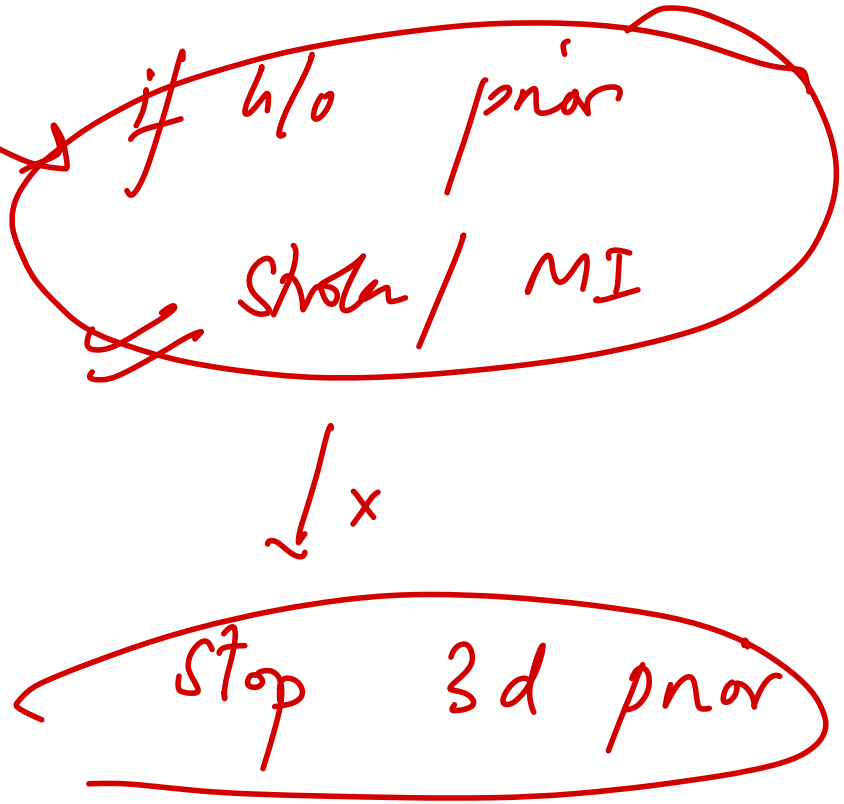
# 28. What would be your advice regarding low-dose aspirin before the procedure?

A) Continue aspirin

B) Stop aspirin and replace with heparin

C) Stop aspirin and give a platelet transfusion

D) Stop aspirin on morning of surgery



**37. Which of the following is an advantage of epidural over spinal anesthesia?**

A) Less dose of drug required

B) Duration can be prolonged using an inlaying catheter

C) Easier technique

D) Less traumatic needle

| Features | Epidural Anesthesia (EA) | Spinal Anesthesia (SA) |
|---|---|---|
| **Drug dose** | Larger dose | Smaller dose |
| **Onset of anesthesia** | Approximately 25–30 minutes | Approximately 5 minutes |
| **Spine level that can be performed** | Anywhere along the vertebral column | Lumbar only (mostly below the L2 vertebral body) |
| **Quality of anesthesia** | Not as good as SA | High |
| **Intraoperative redosing** | Possible, can be continued postoperatively via a catheter | Generally, a single-shot injection |
| **Duration of block** | Adjustable, prolonged | Brief, usually 2–4 hours |

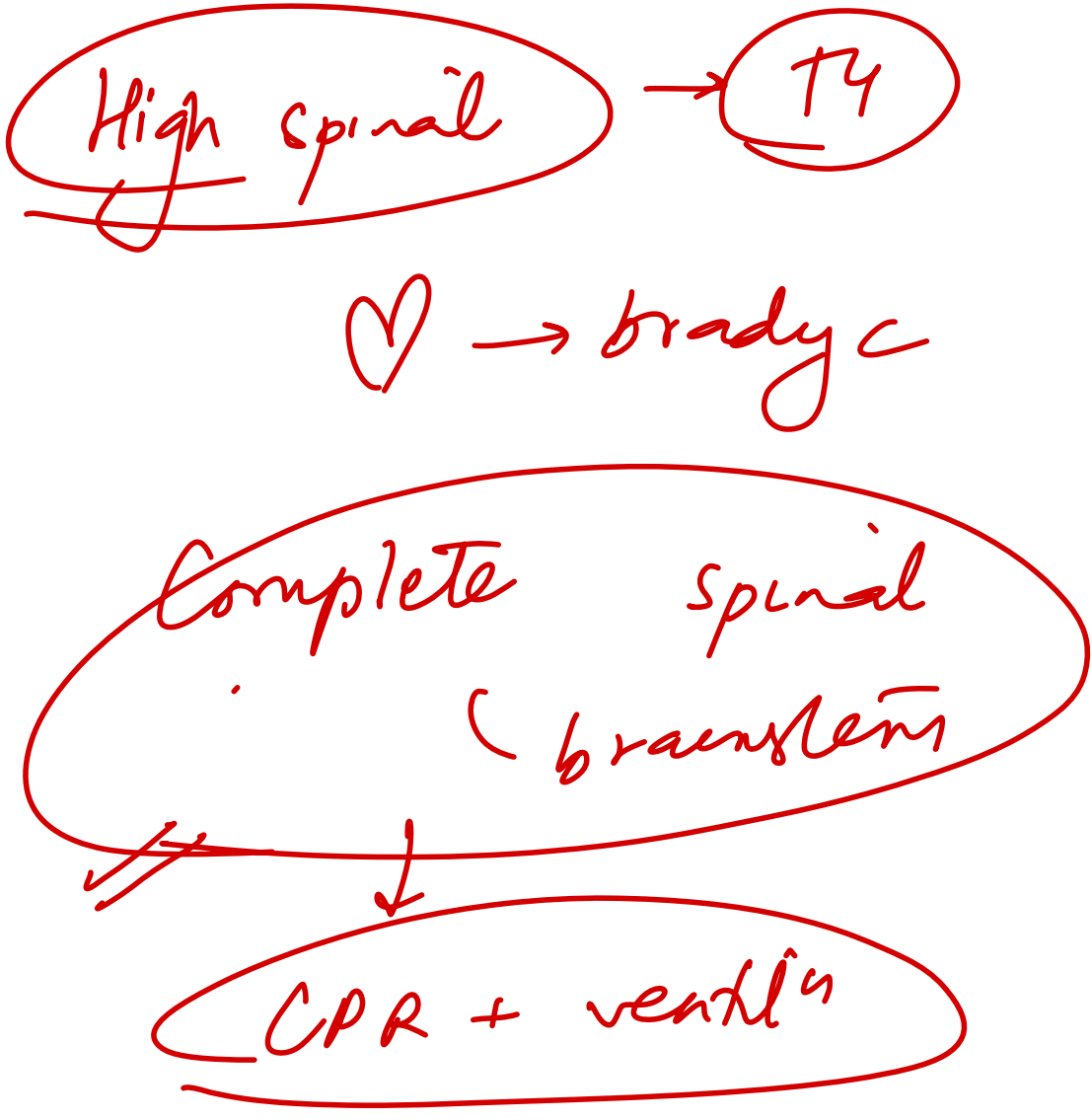
eclampsia ↓ GA

preeclampsia ideal

autonomic > SN > motor

↑ r/o - hypotension

DOC for spinal induced ↓ → Phenylephrine (α1)


High spinal
T4
♡ → bradyc
complete spinal
( brainstem
CPR + ventil°

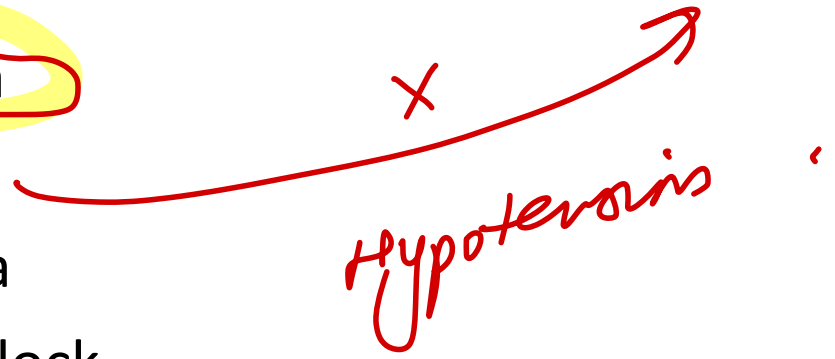
**48. Which is the preferred anaesthetic technique used in a surgery for a patient with severe aortic stenosis?**

A) General anesthesia

B) Spinal anesthesia

C) Epidural anesthesia

D) Intercostal nerve block



**50. Identify the correct size and material of MRI compatible gas cyclinder**

A) Stainless steel, Size E

B) Molybdenum steel, Size A

C) Aluminium, Size E

D) Hard plastic, Size A

**27. Identify the correct statements?**

**1.Procaine will not dose readjustment in a case of liver failure**

**2.Meta-zoonoses are transmitted biologically by invertebrate vectors**

**3.Gueldels airway is measured from tip of nose to angle of mandible**

**4.Dextran 40 is the best colloid for microvascular expansion**

Options;

A) 1, 2, 3, 4

B) 1, 2, 4

C) 3, 4

D) 1, 3, 4

| Feature | Amides ("i") | Esters |
|---|---|---|
| **Structure** | Amino-amides | Amino-esters |
| **Examples** | Bupivacaine<br>Lidocaine<br>Ropivacaine<br>Prilocaine<br>Mepivacaine<br>Articaine | Cocaine<br>Procaine<br>Benzocaine<br>Tetracaine |
| **Volume of Distribution** | More | Less (due to metabolism of pseudocholinesterases) |
| **Metabolism** | Liver – cytochrome P450 | Plasma – pseudocholinesterases |
| **Duration of Action** | Longer | Shorter |
| **Allergic Reactions** | Rare (*methylparaben preservative) | PABA metabolite (most likely allergic to esters) |

# COLLOIDS

| Colloid Type | Examples | Main Uses | Key Risks / Notes |
|---|---|---|---|
| **Dextran 40** | Dextran 40 (MW ~40k) | Microvascular surgery (finger, limb reimplantation) | ↓ Platelet aggregation, ↓ viscosity, bleeding risk |
| **Dextran 70** | Dextran 70 (MW ~70k) | Plasma expander in hypovolemia | |
| **Hydroxyethyl Starch (HES)** | Hetastarch, Pentastarch, Voluven | Volume resuscitation (limited use now) | Coagulopathy, AKI, avoid in sepsis |
| **Gelatin** | Gelofusine, Haemaccel | Short-term plasma expansion | High anaphylaxis risk |
| **Albumin (Natural Colloid)** | 5%, 20% Human Albumin | Hypoalbuminemia, liver failure, burns | Expensive, safe in most |

**A 30-year-old construction worker presents to the pain clinic for a procedure involving local anesthetic infiltration for pain management. The physician wants to ensure that the patient receives adequate anesthesia with minimal systemic absorption issues. What is the correct order of routes for the absorption of local anesthetics from fastest to slowest?**

A. IV, Intercostal, Caudal, epidural, Brachial, subcutaneous
B. Intercostal, Epidural, Caudal, Brachial
C. Brachial, Intercostal, Caudal, Epidural
D. Caudal, Brachial, Intercostal, Epidural