

DATE

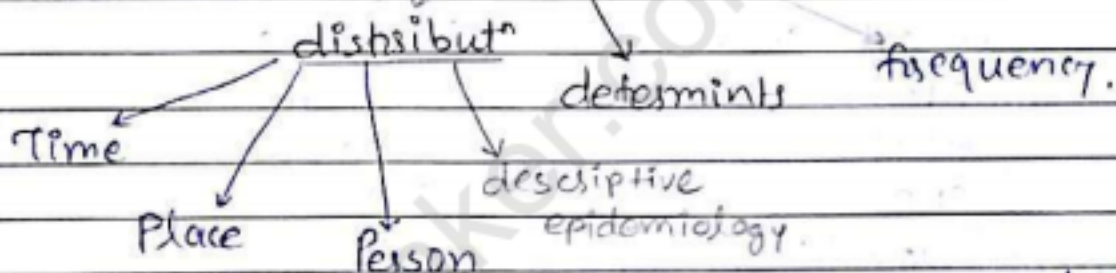
Epidemiology :- (John M. Last given definitⁿ)

• Epidemiological triad $\leftarrow$ $\begin{matrix} \text{Agent} \\ \text{Host} \\ \text{Environment} \end{matrix}$

• $\rightarrow$ phase-4 of clinical trial $\rightarrow$ After marketing approval of drug

Epi - Among
demi - people
logy - study

• study of diseases among People



• Time distribution :-

Influenza ✓	Measles ✓	all Respiratory disease
Asthma - Spring/Winter	Mumps ✓	Winter
Malasia Dengue ✓	Rubella ✓	Newest ds. of India
Typhoid ✓	C. Pox ✓	× Congo fever
food Poisoning ✓	DM ×	(H1N1) Winters
Hay fever - Spring	HTN ×	Polio
	HIV ×	× Neonatal Tetanus
	CHD ×	

• Influenza $\rightarrow$ Europe $\rightarrow$ Winters
(exceptⁿ) $\rightarrow$ India $\rightarrow$ Summer.

• Congo fever spread by tick bite

• 3 New ds. of India - Congo fever - 2010 Gujarat
winters - 2009 - Pune.

(Total = 5+1=6 cases)

DATE

- * Polio - 1 case in West Bengal. → P₁ strain
(∴ eliminated for 8 yrs case free)
so polio still present in India.
and vaccine derived → 5 cases (P₂)

Place distribution :-

East/NE	Malasia	Bihar/WB/UP	Dengue	Delhi, Kerala, Bengal, etc.
	Kala Azar		Measles X	
Guj/Mumbai	Leptospirosis		C. Pox X	
	Polio		HIV	T. Nadu, Maha, Karnataka, A.P., Manipur, Nagaland
	T.B X (Urban = Rural)		H ₁ N ₁	
	Breast Cancer X		Congo fever	→ Gujarat
	DM		P. ovale	→ Guj./delhi/assam
	H-TN	U > Rural	Leptosy	→ Bihar/WB/assam
	CHD		Gonorrhea X	
West	fluorosis		JE ✓	
Central area		Vectors	KFD ✓	
GJ		Culax	filariasis	→ Coastal states
MP		mosquito	Typhoid X	
Maha etc.				

- * Leptospirosis → Rat Urine - Cut around
→ spread fast in Monsoon.
- * Polio → UP / Bihar but Now No place dist.
but globally show → Afghanistan
as 30/9/11. ← Pakistan
← Nigeria
and Now India - cases

* ① Yellow fever doesn't show place dist. in India
(∴ Not present but occurs in China & Africa)

* ② Onchocerciasis doesn't occur in India

* ③ SARS & ④ Bird flu never occurred in India.

classmate * Gujarat

Pondicherry

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HIV → S. Africa > India → in all cities (everywhere)

H₁N₁ → spreading by Airpost (International)
mainly in Metro city.* 2 countries can't control it (Endemic)
— India and NZ.Leprosy eliminated means ⇒ WHO
< 1 case / 10000 (India-2005)
so Eliminated from India but still presentGoiter was place distributⁿ → 1995
after that iodized salt introduced but
in Gujarat - Kerala Not following it.JE (Japanese Encephalitis) → in 28 State
↓ & 7 UTS
> 80% Gorakhpur & UP.Kyansompus Forest ds. → transmit by ticks
↓
mainly in Karnataka.Respiratory ds. doesn't show place distributⁿHep A is m/c Hepatitis in India
m/c Hepatitis in Pregnant → Hep. A
Hep. E Highest mortality in Pregnancy → Hep. ERespiratory diseases → don't show Sexual
(Mumps, Measles, Rubella) distributⁿ

Person distribution

Age

733% - DM } after 40 Cancers any Age (>55)
 750% - HTN } Cancers (80-90%) after 55
 CHD - >40 OA/OP/OM → >40 yr.
 99% - Measles food poisoning X
 cases in Mumps - (5-9 yrs.) TB, Leprosy ✓ Polio ✓
 6m-3yr. C. Pox School H, N, X NNT ✓

* Measles practically can't occur before 6 months
 ∴ passive immunity (Ig) from mother.

* Mumps - school ← C. Pox.

* ✓ HIV incubatⁿ → 10 years so show Person dist.
 Commonest Reported in → 30-44 yrs.
 but can occur at any Age

Sx :-

1% M ← SLE ✓ f Mortality ↑ in f Hep A X } food. Water
 Breast Ca ✓ Hep E X }
 Lung Ca ✓ M
 CHD ✓ M Rubella
 DM ✓ M C. Pox
 HTN ✓ f H, N, I
 (most 1:7) ← HIV ✓ f → in India = 3:2 Malasia X
 Measles X (∴ f & not Reported) Dengue X
 food Poisoning
 Typhoid
 cholera
 Polio
 BPH X ⇒ only Seen in Male
 So called Cervical - Ca X
 Stomach - Ca ✓ M
 Oesal - Ca ✓ M
 TB X
 RA ?
 OP/OA/OM ✓ f
 Goiter/Thyroid ✓ female
 Gall stones
 classmate
 Male → Renal Stones

(Place distributⁿ)

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* Stomach Ca $\rightarrow$ Highest globally in Japan
 $\therefore$ SMOKED fish $\rightarrow$ Nitrosamines

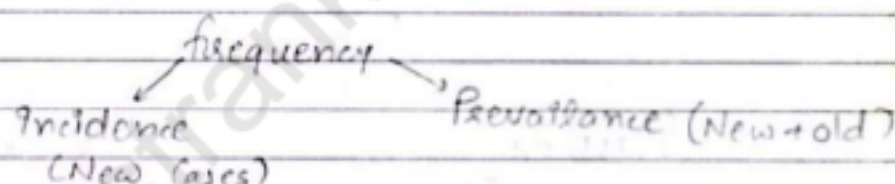
$\rightarrow$ m/c Stomach Ca $\rightarrow$ Alcoholism - everywhere
 so don't show Place distributⁿ.

* 47% Males & 21% female & Smokes in India
 30% doctors & Smokes in India.

* Determinants $\equiv$ (Causative Agent)

* Congo fever $\rightarrow$ Nairo Virus $\rightarrow$ Doc = Ribavirin.

* $\times$ Pigs cause Swine flu
 $\times$ Pigs have Role in Transmission
 now called H₁N₁ type A Influenza



* Tools of Measurement &

$$\text{Rate} = \frac{a}{b} \times \frac{1000}{10000} = \text{IMR, Incidence}$$

$$\text{Ratio} = \left(\frac{a}{b} \right) \text{ both Unrelated} = \text{IMR, CFR, SR}$$

$$\text{Proport} = \left(\frac{a}{b} \times 100 \Rightarrow \% \right) = \text{Prevalence, CFR}$$

$$\text{Infant Mortality Rate} = \frac{\text{No. of Infant death} \times 1000}{\text{total No. of Live Birth.}}$$

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Part of denominator.

PAGE

★ IMR of Japan $\rightarrow 3$
 developed $\rightarrow < 10$
 developing $\rightarrow > 10 (40-100)$ DATE

Infant Mortality Rate include

Early ENNMR - 0-7 d
 Peri PNMR $\rightarrow 28 \text{ wk} - 7 \text{ days Post delivery}$
 Late LNNMR - 8-28 d
 Post PNNMR - 29 d - 1 yr.

→ Intrinsical Causes of Perinatal Mortality Ex.

B. Asphyxia

B. Injury

Obst labours

ans. ✓ Antepartum Hemo.

India Now $\rightarrow 50$

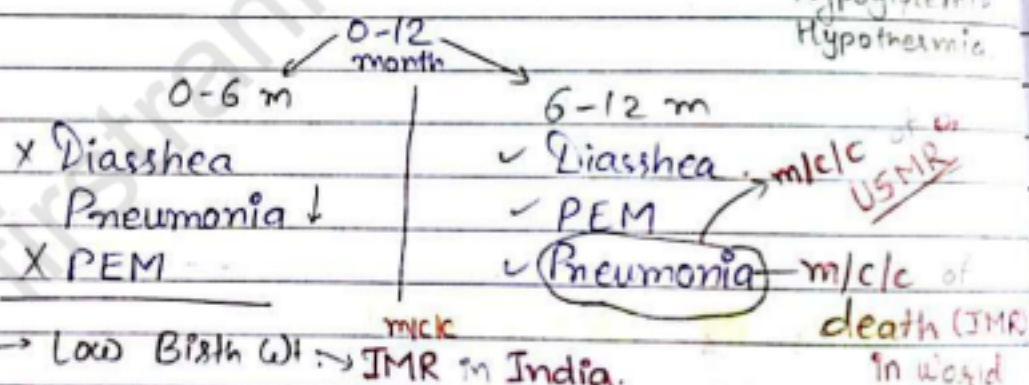
$\Rightarrow$ IMR = 47 means If 1000 livebirth 47 die.
 m/c/c of IMR $\rightarrow$ Low birth wt &

2nd

Prematurity

1st

Hypoglycemia
 Hypothermia



* in 1 yr $\rightarrow$ max death in 1 month

Rule of 1
 for IMR

1st day - 1 week
 1st hr.

* m/c/c of death in Developed Countries (IMR)

Is $\rightarrow$ Congenital Malformation

★ Maternal Mortality Rate = $\frac{\text{No. of Maternal death}}{\text{Live Birth}} \times 1000$

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Maternal death → all ✓ Pregnancy

↓
m/c/c of MMR
PPH

✓ Labour / Delivery
✓ < 42 days Post delivery

m/c direct Cause of MMR → PPH

m/c indirect Cause → Anemia > Sepsis

* MMR in India = 212 (MMR is Ratio)
means 212 death per 1,00,000 live births.

* Incidence = $\frac{\text{No. of New cases}}{\text{Total Population}} \times 1000$
↓
Rate

* Prevalance = $\frac{\text{New total cases}}{\text{total Population}} \times 100$
↓
Proportⁿ

→ Prevalance of TB infectⁿ = 40% → 100 population
40 are infected

? Infectivity → Entry & Multiplicatⁿ

for HIV infectⁿ = 0.29% → High

* Sex Ratio = $\frac{\text{No. of f}}{\text{No. of M}} \times 1000$
(Ratio)

SR India 2011 → 940 → No. of female / 1000 male

Q = total populatⁿ = 10000 and M : F = 1 : 1

Sex Ratio → $\frac{1}{50}$
 $\frac{500}{5000}$

$\frac{100}{100} \times 1000$

ans = 1000 ✓

Q → total ♀ = 5000

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Q → Total P = 10000

M:F = 3:2

SR = 1500 → true / false ✓

1500 F / 1000 male. → its false

$$\frac{2}{3} \times 1000 = 666$$

Q → Total P = 10000

SR < 1000

M < 500

F < 500

M < 5000

✓ F < 5000 - ans.

* Child Sex

$$\text{Ratio} = \frac{f}{m} \times 1000$$

[CSR] (M) - 0-6 yr.

CSR = India → 914 → Highest → Mizoram = 971
lowest → Haryana = 830

* CER = Case fatality Rate = $\frac{\text{No. of death}}{\text{No. of Cases}} \times 100$
Proportⁿ %

CER of Rabies → 100%

→ less dangerous = Tetanus, YE, M. meningitis → 80%

→ 35% → JE, Congo fever

Measles - 3%

C. Pox - 1%

Hep. A - 0.1%

H₁N₁ - 1%

Q → Case fatality Rate → Virulence of Causative
Killing power of ds.
Lethality of ds.

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Case
control

2012 - 100 lung

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1985 - 80 were Smoking

DATE

* Smoking → Lung Ca
Cause → effect
Risk factor → disease
Exposure → outcome

Epidemiological Studies

observational

in Med it's not
Epidemiology Study.

Experimental

(Interventional)

Descriptive

Analytical

Hypothesis
(H.) Formulatioⁿ

H. Testing

H. confirmatioⁿ

Time, Place, Person

Cohort study

RCT (Randomized)
Control trial

Case Control "

Clinical "

Cross Sectional "

field "

Ecological "

Community "

Cohort Study

vs Case Control Study

2012 - 100 Smokes

2 groups

Exposed

2027 - 80 lung Ca.

Exposed

Non-
exposed new

* also take 100 (Non) Smokes

causal for occurrence of
Some ds. in both gp
And Compare.

Non-
exposed 2027 80 lung Ca.

Strength of Associatioⁿ =

(RR)

* Relative Risk = 8 means 8 time Higher chance of getting 2
(Risk Ratio)

RR > 1 → (+) Associatⁿ Present

RR = 1 → No Associatⁿ (blw Smoking - Lung Ca)

RR < 1 → (+) Associatⁿ Present

Risk factor is Protective.
(Inverse / Negative Associatⁿ)

Q → all Risk factor except :-

CS_I RR - Smoking - Lung - Ca = 8

CS_{II} RR - Air poll. - " = 3.6

X CS_{III} RR - Milk - " = 1

Not Risk factors

Q → out of 5000 truck drives who use mobile

500 met accident → in 2006

" 3000 " who ^{Not} use mobile

Don't do it (100) met accident → in 2006

RR ? = $\frac{5}{0.20}$
3 ✓
0.33

ie $\frac{500/5000}{100/3000} = 3$

what is x - ?

if 500 = RR = 0.6

$\frac{500/5000}{x/3000}$

→ Incidence Among exposed = 10 } RR = 2
" " Non-exposed = 5

Cohort Study → forward looking
(other Names)

Prospective study

Cause to effect study

Risk fact. to disease study

Exposure to outcome study

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→ Cohort Study

* FRAMINGHAM Heart Study
1948 - in Framingham Town.

① Age = 30-62 yrs

② Total person = 4469

③ Incidence of CHD every 2 years.

④ Cohort Study.

* Case Control study :-
Ds. Healthy

Smoking ← History → Lung Ca
(70) (100)
1997-?

Smoking ← Healthy
(1997) 100
10

2 gps
diseased cases
Non-diseased control

* Strength of Association :-

not $RR = \frac{ie}{ine}$

↓
Odds Ratio = $\frac{ad}{bc} = \frac{70 \times 90}{10 \times 30} = 21$
(OR)

Cross Product

Ratio OR → >1 Association Present
OR → =1 No Association
OR → <1 Protective

we ask H/O
Same Exposure
in Both gps. &
Compare.

* Casual Association

		Disease	
		Present (Cases)	Absent
Risk factor (Smoking)	+	70 a	10 b
	-	30 c	90 d
		a+c	b+d

CHD
 www.FirstRanker.com

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H/o Alcohol +

30

20

2.5

-

20

30

✓ 2.25

900

400

→ Alcoholics have 2.25 time Higher chances than Non-Alcoholics.

★ Case Control Study - Backward study

* Cross Product Study

TRDHOC Study

Retrospective
Effect to Cause
Outcome to exposure
Disease to Risk factors
X follow up
Incidence study

Cohort

>

Case Control

S → Lung Ca
2012 2022

S ← Lung Ca
1992 2012

- | | | |
|---|---|--|
| 1 | Time Consuming | ✓ Quicker |
| 2 | Expensive | ✓ Cheaper |
| 3 | Incidence - RR ✓ >>> OR (more Accurate) | OR ("History Based")
error = Recall Bias. |
| 4 | No Recall Bias ✓ | |
| 5 | Not for Rare ds. | ✓ Rare diseases |
| 6 | Ethical Problem | ✓ No ethical problem |
| 7 | Loss to follow up (Attrition) | ✓ No loss to follow up. |
| 8 | Hawthorne bias (Smokers quite Smoking) | ✓ No Hawthorne bias |
| 9 | Multiple outcome can be studied Simultaneously. | Multiple Risk factors can be studied simultaneously.
(Framingham Heart Study) |

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less SELECTION Bias

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Prospective

✓ Retrospective

✓ Mixed

CC

Retrospective

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Q

RR

(ie-inc) AR (Attributable Risk)

PAR (populatⁿ AR)

OR

* fatal diseases → CC is better like

e.g. * OCP → Thromboembolism

* Cross sectional study:- (at a point of time)

Simplest study. Smokers = 40%
lung Ca = 1%

doesn't give

RR, OR, incidence
Prevalence

Just gives you Prevalence study.

Q → C > CC > Cross Sectional > Ecological Study.

at point of time
2012

Ecological fallacy is an Error. Nutritional Survey

Avg. fat intake = 20 gms/day. → Gives Nothing

* Unit of Study = (Results & applicable on)

Individual

Populatⁿ

C > CC > CS

> Ecological

Q → which of following is Not Horizontal

1 C → Horizontal / longitudinal

2 CC

3 CS

" Ecological

Vestical / Non-longitudinal

Q

CS
Snapshot

Ecological

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Any factors

ass.

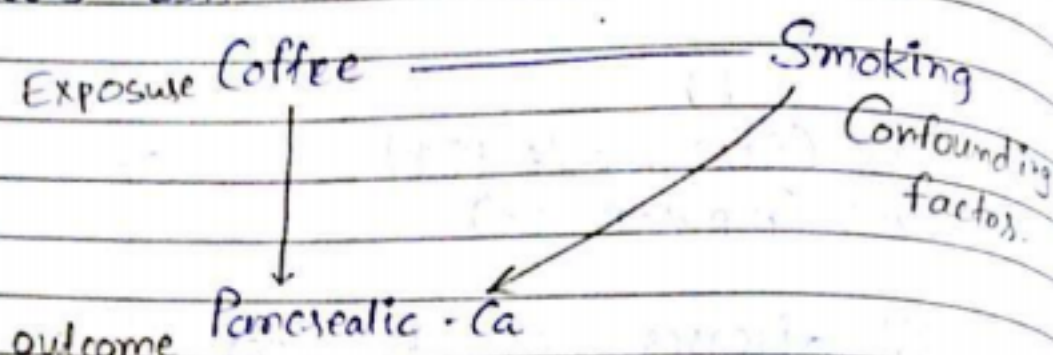
but

c

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and outcome

term. → 1960's → USA



example of C_f

2012 - 100 Smokes

100 NS

765 M City

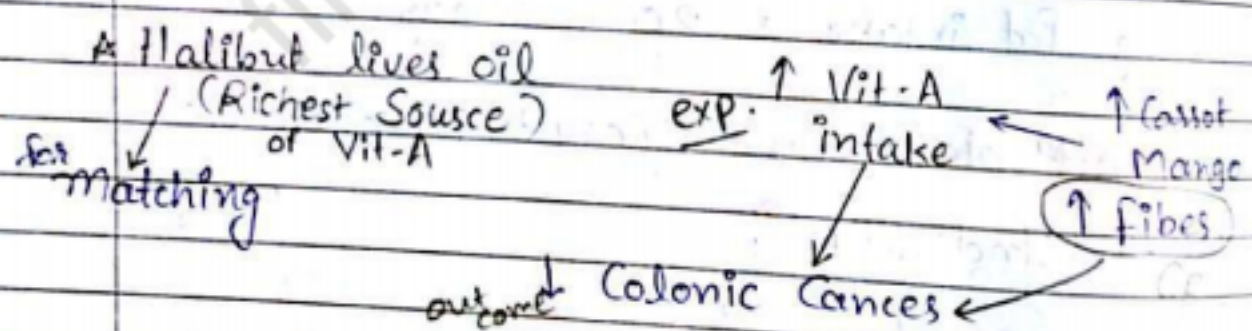
<25 f village

80 - lung. Ca

10 Lung Ca

OR = 8 but dlt C_f = ↑↑ 8.8 / 8.9 / 9

* Confounding is removed by MATCHING,
 ⇒ equal distributⁿ of C_f in Both groups.
 OR Removal
 disadvantage = only for known C_f



* **Bias** is a Systemic Errors.

Subject = Hawthorne Bias, Recall Bias

Investigator = ① Misclassification, ② Interviewer Bias

Analyzee classmate = ③ Selectⁿ Bias

Eliminated by Giving

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Single $\rightarrow$ subjects Not aware of it

Double $\rightarrow$ Subject + Investigator "

Triple $\rightarrow$ Subject + Inv. + Analyzes "

* Open Study $\rightarrow$ Absence of Blinding

* Berksonian Bias $\rightarrow$ diff. Rates of admission in diff. Hospital.

like X-Hospital - Cancer Hospital - all Ca-Pts come to this & you check Results.

* RCT :-

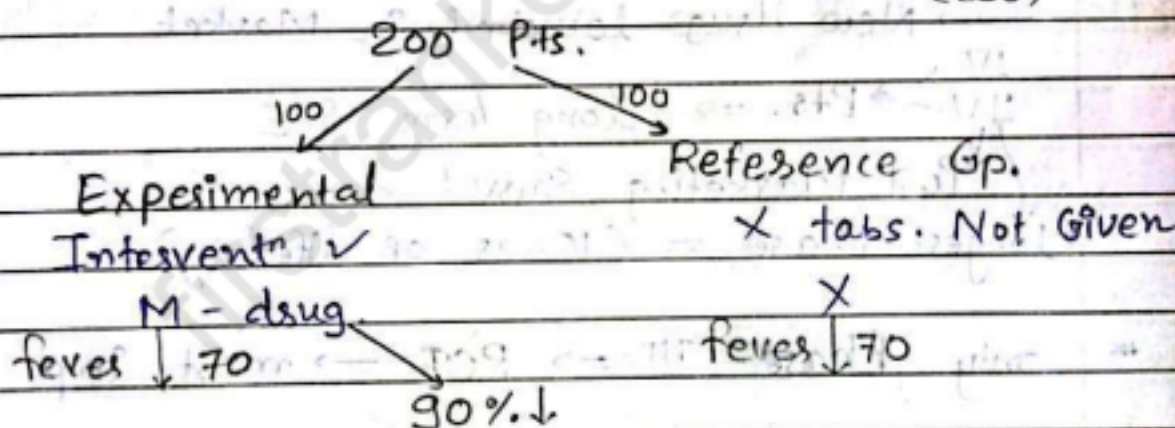
Randomised Control - Trials $\rightarrow$ new drug.

↓
equal & comparison Gp

known chance

Unit of study

* New anti Pyretic drug - "M" $\rightarrow$ only Patients / cases (200)



M ✓

Placebo

but Not Given & Pts take Paracetamol k/a

Subject bias (Hawthorne)

Remove

Single blinding (Placebo)

M ✓
(New)

PCM
(old drug)

Randomized $\rightarrow$ Participants have equal and known chance of falling into either experimental or Reference Gp.

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Purpose of Randomisation in RCT

Remove "Select" Bias

" Known Confounding factors

" Unknown Cf

Blinding < Matching < Randomisation

Bias

known Cf

Bias

known Cf

Unknown Cf

Metaanalysis > Randomised

★ CLINICAL TRIALS ★

Phase I → Healthy Human Volunteers ⇒ Purpose: Safety & Non-toxicity Profile

II → Pts — effective

RCT → III → Pts → Comparison to existing drug
→ New drug launched in Market

IV → Pts. ⇒ long term S/E

↓ Post Marketing Surveillance (S/E)

Longest Phase = (10-25 or life long)

* only Phase - III ⇒ RCT → most imp Phase

Q → New A/cancer drug is ↑ Toxic & S/E / Lethal
So what should be study Unit in Phase-
ans. → Cancer Patients

↓ Terminally ill (end stage)

Ca-Pts Refractory to other t/t

Q → WHO- GCP (Good clinical Practices)
not Req. in Phase I

(ILL) ^{PQ} ^{LI} ^{life}
Physical Quality of Index

(HDI) ^{Human develop. Index.}

↓
Literacy Rate
- Knowledge
- Educational Index
- Enrollment Ratio
↓
IMR
↓
life expectancy
1 yr Age

↓
Literacy Rate
↓
Income
↓
Life expectancy
Birth.
↓
longevity

$0 < PQLI < 100$
India = 65

$0 < HDI < +1$
India = 0.519
now = 0.547

HDI - low < 0.5
Medium 0.5-0.799
High ≥ 0.8

* Most developed Countries

(HPI) in world $\rightarrow$ Norway $\rightarrow$ HDI = 0.943

* Human Poverty Index is complementary to HDI.

Below Poverty line :- (BPL)

① Calorie Intake Rural < 2400 k/cal/day
Urban < 2100

② Income - Rural $< 22/-$ per day } 37% India
Urban $< 29/-$ per day } BPL

③ International Comparison

Income < 1.25 US \$ / day $\rightarrow$ Extreme
 < 2 US \$ / day $\rightarrow$ Moderate

* Time distributⁿ Disease

Epidemic

① Short term fluctuatⁿ - days - wks - Months $\rightarrow$

② Long term fluctuatⁿ - decade = Secular trend

③ Periodic fluctuatⁿ $\rightarrow$ Seasonal cycle = every few years.

Methyl Iso Cyanide (MIC)

- * food poisoning
- * Bhopal Gas Tragedy (3-dec-1984)
- * Chernobyl Tragedy (26-april-1986)
- (CS, SA, I₂)
- * Fukushima Tragedy (11-3-11)

Epidemic

① No. of Cases clearly in excess of Normal expectancy

largest Accidental Release of Radioactive Material (level-7)

- * Polio & Communicable ds.
- Non-Communicable (DM)

SECULAR ← HIV, Polio

Seasonal → Measles, Varicella, ARI, Meningitis & Hay fever, Sunstroke, Snake Bite

Cyclic ← Measles (2-3 yrs)

Rubella (6-8 yrs)

Epidemic/Pandemic ← Shift ← Influenza - Max. cyclic trend
Spasmodic ← dsift ← (∴ Antigenic Variatⁿ)
(Point Mutatⁿ)

- * In 2006 - Mumbai - 1 case
 - J & K - 1 case
 - UP - 457x
- Epidemic
- Not Epidemic

Epidemic if

② No. of Cases > $\left[\frac{500}{\mu} + 2 \times \frac{100}{2\sigma} \right]$

② New disease (i.e. Congo fever in Gujarat)

④ Recurrence

* ENDEMIC :- constant presence of ds. in Populatⁿ.

DM, MMR

HTN, CHD, HIV.

→ but food poisoning?

* Pandemic → ds. spread from Country to Country

① H₁N₁
② H₅N₁
③ SARS

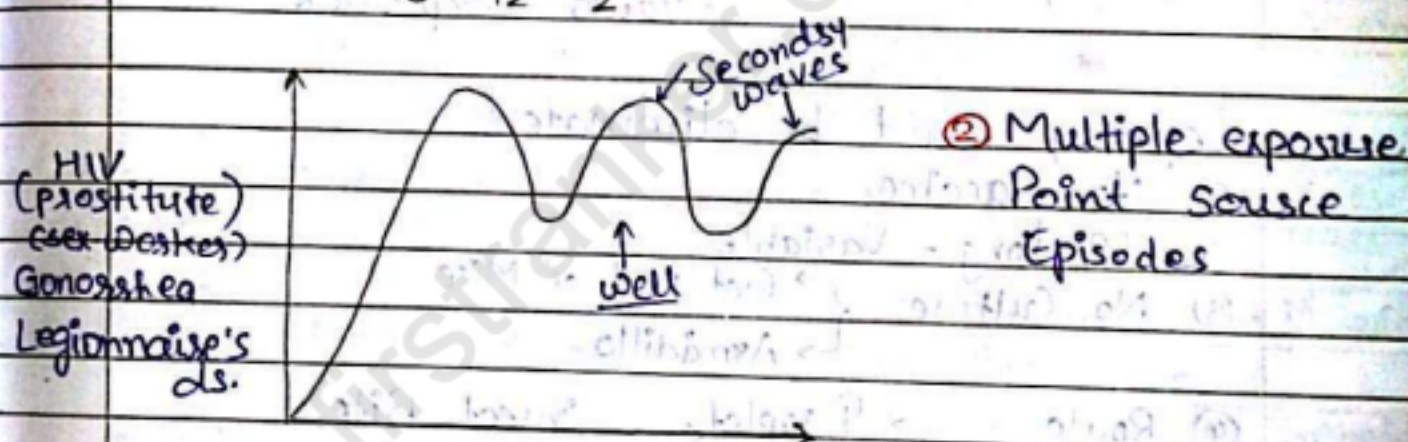
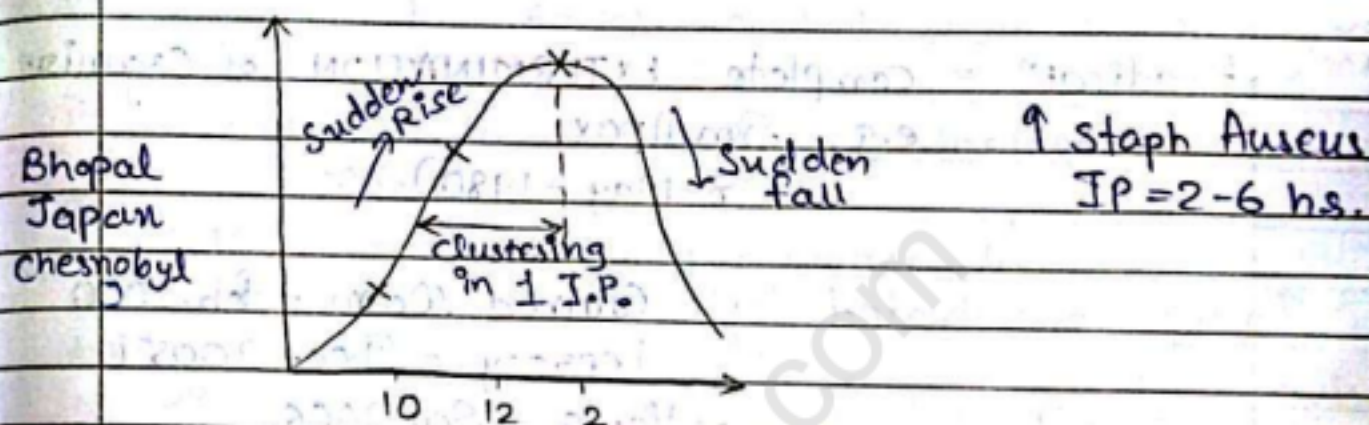
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★ ★ Sporadic → Scattered in time and place

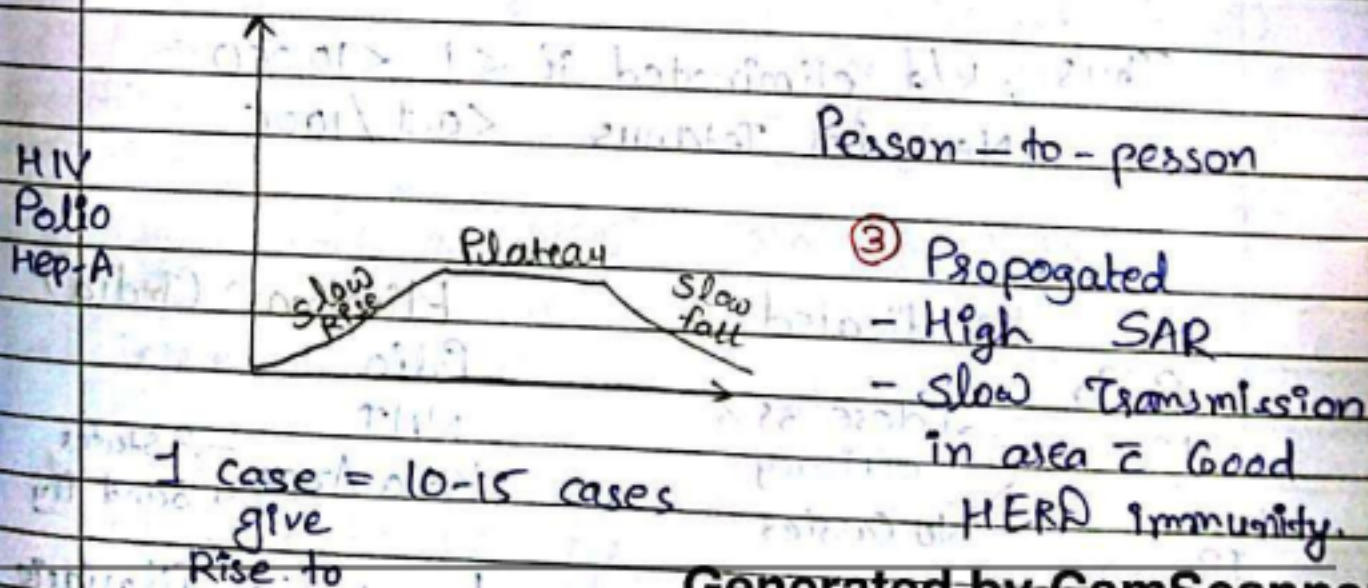
- As. Poisoning
- Snake Bite

Types of Epidemics

① Single Exposure, Point Source epidemic



Contaminated well - Typhoid - IP - 10-14 days



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FirstRanker's choice
& Contraceptive

Primasy (1°) specific protect

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All diagnosis / Screening → 2° - diagnostic

DATE

IP
famous → NNT - (8th day disease)
→ TToxoid to pregnant

LEVELS of PREVENTION :-

Aim → Eradicate disease.

① Primordial level — before emergence of Risk factors
(don't start smoking)

② Primasy → Risk factors yet but No ds. Yet
Can prevent ds

③ Secondary → Possibly disease started.
Can't prevent ds.

④ Tertiary → ds. in progression / over

* Modes *

1° Health Promotion
Specific protect

most cost effective Intervent

all vaccines, Anti Cervical
Condom - Contraceptive
(HIV) & Pregnancy

2° Early dx
Treatment

← BCG in t/t of Bladder
Cancer

Physio
therapy
(Both)

3° disability limitat

Rehabilitat

Peripherol Smeas for Malasia
CXR Pneumonia
Blood Culture for Typhoid
Pap Smeas. (Screening)
Sputum smears for AFB
(cough > 2w)

Doc = Malasia = chloroquine

Doc = chemoprophylaxis

Doxy cycline (< 6w)

1° Mefloquine (> 6w)

Specific

can prevent

Blood Culture
checking BP
fetal USG in Preg.
Amniocentesis

* Physiotherapy in Polio → 3° (Both)

Spect in Myopia

* Intraocular lens → for Cataract → 2° (Tx)

* Mosquito net / Repellants → 1° Specific

DDT Insecticide

Seat Belt / Helmet

H/O - Recurrent NTD - Folic Acid 3 month

Neural Tube defect

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Not for Primary disorders (Accumulation of cases)
 * Primordial → Malasia → Source of cases
 * 40 yrs male H/O DM → 1° Health promotion
 but also Symptoms → 2° - Early diagnosis

- * 5 yrs child Play everyday 30 mins to prevent DM → Primordial (∴ No Risk)
- * Best level of preventⁿ → Primordial.
- * Best level of preventⁿ for TB → 2° (ED)
- * " " " Leprosy → 2° (ED)

→ Primary Case = 1st case of disease
 Secondary Case = all cases develop from 1st case.

* Index = first case coming to Notice of Investigator
 case → 1° / or 2° usually in India 2°

Incubation Period - Entry of organism till 1st Sx.

Measles

10-14 day
fever → Rash

AIDS

10 yrs.

Hep. B

45-180 d (6w - 6m)

Hep. A

15-45 d

Typhoid

10-14 d

Polio

7-14 d (4-33 d)

YF

2-6 days

Quarantine period 6 day

Staph Aureus

2-6 hours

Food Poisoning

& B. cereus.

* Serial Interval

→ Registratⁿ of Vital events

Under (National Populatⁿ Policy (2000))

Q 100% Registratⁿ of → Birth - 21 d } by 2010
 Death - 21 d }
 Marriage - 30 d }
 Pregnancy } yet to do by 2012

Q ICD - 10 - 10th editⁿ (also Revised every 10 years)

International classificatⁿ of disease
 3 Volume + 21 chapters.
 ↓
 Vol. 1 - classificatⁿ
 2 - Instructⁿ Manual
 3 - Alphabetical Index.

Q International Death Certificated (IDC)

four^a lines - Ia - Immediate Cause of Death

Ib - Underlying cause "

most Imp → Ic - Main Underlying Cause of Death
 essence of IDC.
 II - other conditⁿ, Not Ass. but contribute to death.

★ Best Indicators of Disease Burden :-

Q → Disability adjusted Life years (DALY)

Years lost d/t disability or Premature death

Sullivan's Index^(SI) = life expectancy free of disability

Q ⇒ DALY - 5 yr
 SI - 60 yrs.

if Life expectancy = 65 yr
 and Accident = 5 yr.

★ ① Disease =

Road accident, DM.

★ Impairment^② - loss of anatomical / physiological
loss^① Hand psychological functⁿ of Body

★ Disability^③ → Unable to do routine daily
Can't write, Impotence work Acc. — Age
all DM. — sex

★ Handicap^④ → Unable to fulfil role in Society
Unemployment (earning)

★ Surveillance - Continuous SCRUTINY of all
factors affecting a disease.

→ Continuous watch over a ds. & Authority & Suspicion.

→ ^A Passive = Pt. report to Health System

→ ^B Active = H. System goes to community to
Search Cases.

① Polio
(AFP Surveillance)

② Malaria

Healthworkers (Male) go to
houses once every
FORTNIGHT

③ Leprosy
Camp

→ ^C Sentinel - Hidden / Missing cases

HIV - Sentinel Sites {
I.V. drug Users (abuses) {
B. Bank
Antenatal clinic
STD clinic

* All Surveillance are - 2^o Preventⁿ

VACCINES

 DATE

Reverse Cold Chain Used for -

Polio stool Sample transportatⁿ

Role of Adjuvant in DPT $\rightarrow$ $\uparrow\uparrow$ Antigenicity
(Aluminium)

Active Immunity
formed within Body

Infectⁿ

Vaccine

Passive Immunity
formed outside body

Ig's

Mother

Active & Passive Immunity is Req. in all except

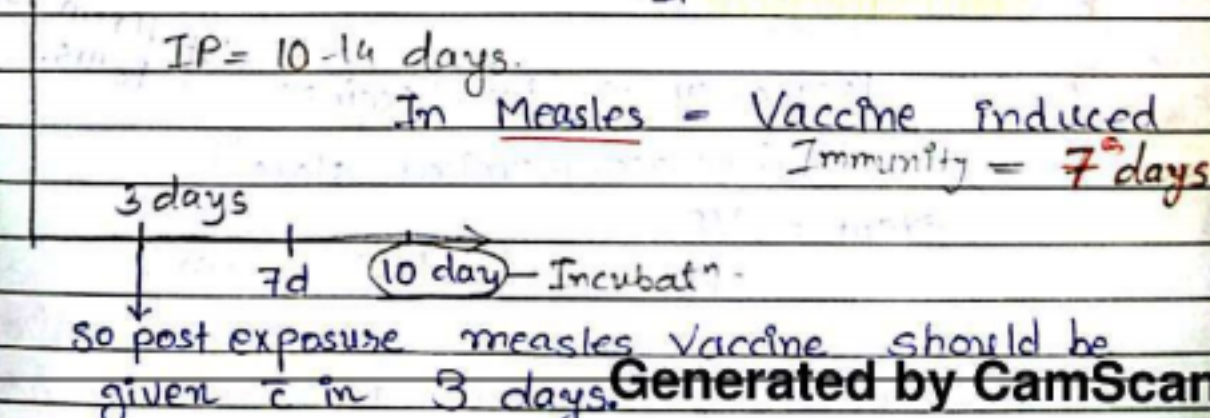
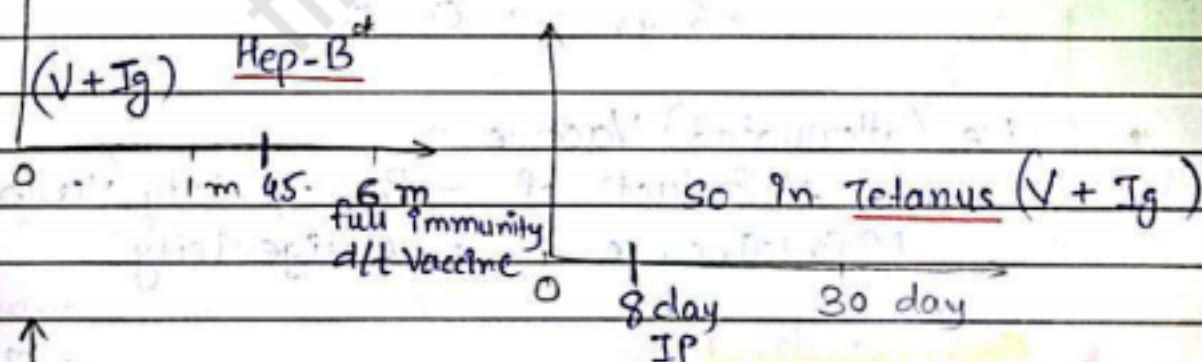
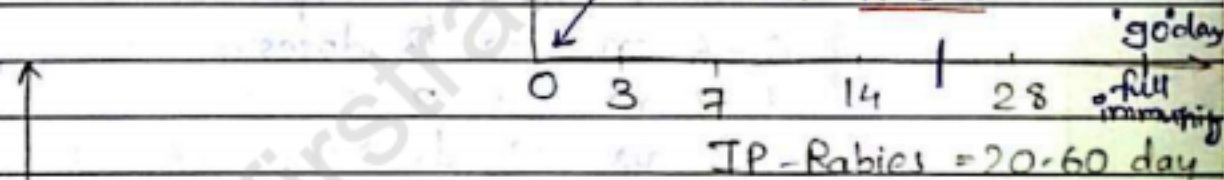
- Rabies

- Measles ✓

- Tetanus

- Hep-B

Ig + Vaccine given
for Rabies



Live	Killed	Toxoid	C. fract ⁿ	Combined
BCG	Hep-B	T	Hep-B	DPT
SABIN ⁷ OPV	Hep-A	D	HiB	DT
Mumps	IPV (Salk)		Meningo-coccal	MMMR
Measles	JE killed		Pneumococcal	Tab-Typhoid
Rubella	Pertussis			
YF	Rabies			
Vaccinia	Typhim-Vi			
Typhasal	killed - cholera			
	" Plaque			
Live cholera	" Influa.			
" Plaque	" H ₁ N ₁			
" Influenza	KFD-V			
" H ₁ N ₁				

Subunit = Hep-B

Conjugate = HiB

Not available in

India = TAB

(∴ Paratyphoid-B

not in India)

→ we have - TA

* Vaccinesⁱⁿ - Doses are Age dependent → HiB

0-6 m → 3 doses

7-12 m → 2 "

1-6 ya → 1 "

> 6 ya → 0 "

* Live (attenuated) Vaccine -

↓ Reductⁿ of - Pathogenicity/Virulence

Maintainance - Antigenicity

* Contraindicatⁿ :-

① C/I - Pregnancy ⇒ Live Vaccine (∴ Immunocompromised state)

Not Harm to Fetus.

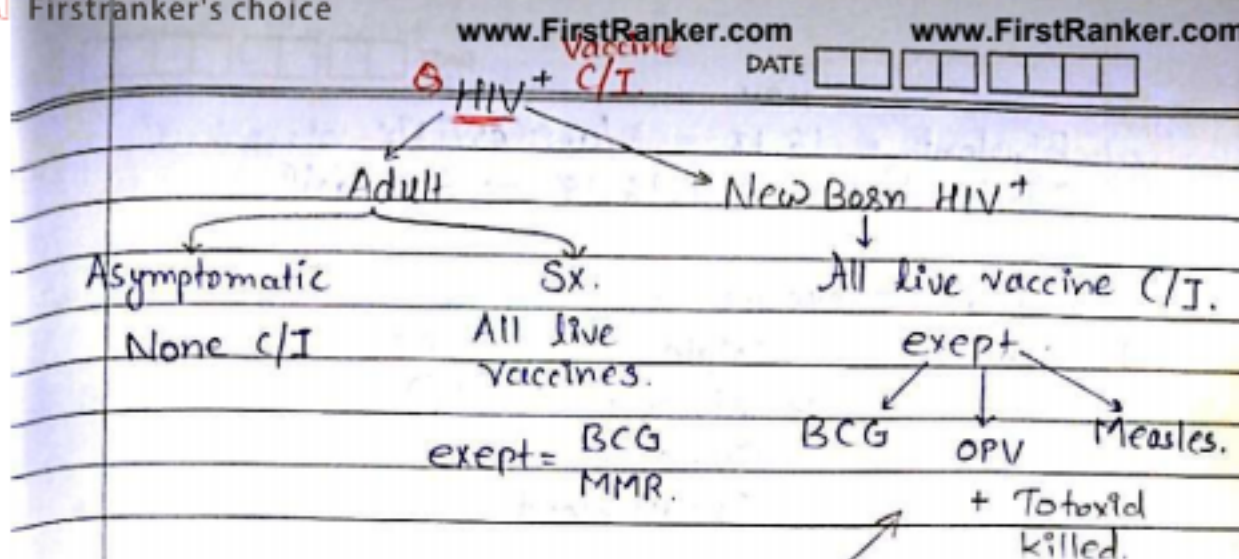
except = YF

✓ Indicated → OPV

+ ② Meningococcal.

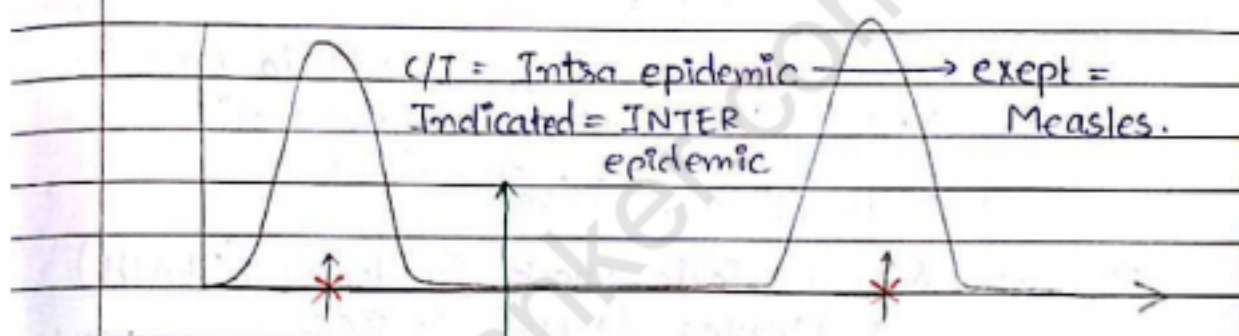
also Toxoids & C. fractⁿ can be give

② C/I in HIV⁺ ⇒ Live Vaccines



Vaccines Indicated in HIV⁺ Newborn to HIV⁺ mother

③ C/I in Epidemics.



④ C/I after disasters.

⑤ C/I → fever → only Typhoid C/I

Diarrhea → None C/I

PEM (Protein Energy Malnutrition) → None C/I

Active Neuro ds → Epilepsy → Pertussis / DPT is C/I.

Non-progressive → CP → None C/I.

⑥ C/I together = Type and Number both are not contraindicated (given at same day)

except = YF and Cholera

← 3 wks. →

* Vaccine Prevent Cancer =

① Anti cervical cancer Vac. f = 11-13 years.

classmate (HPV)

♂ = 12-14 yrs.

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Bivalent = 16, 18 = k/a Cervixix
 Quadrivalent = 6, 11, 16, 18 → Gardasil

- ③ Hep-B - prevents - HCC.
 OPV is - Triple - **MMR, DPT**
 ✓ Trivalent (P, P₂, P₃)
 Quadruple
 Quadrivalent

AEFI (Adverse effect following Immunization)

- ① m/c Ass. → Hypersensitivity → Hep-B > Pertussis (DPT)
 " " SHOCK
- ② m/c Vac. Ass. → Paralysis → Polio (OPV)
 (VAPP) Vacc. Ass. Paralytic Polio
 m/c - P₃ [1 in 1 million]
- ③ Vac. Ass. → Toxic shock Syndrome (DEATH)
 = Measles / MMR > BCG
- ④ Vac. Ass. → GBS → Influenza (killed) > ^{killed} H₁N₁
- ⑤ d/t which S/E Rotavirus Vac. banned
 → Intussusception
- ⑥ m/c Ass. → Persistent inconsolable Crying
 m/c A/w Fever →
 m/c A/w Neuro Complication → Pertussis / DPT
 so give PCM

Time Limit

↓

1 hr

1/2 hr

1 "

1 "

As Soon as Possible

Lyophilised Vaccine / freeze dried V.

① BCG → Normal Saline / NaCl

② YF → "

③ Measles } → distilled water / sterile water

④ MMR

⑤ Hib. → DPT vaccine

* Reconstitution → Dilute.

* if diluent change

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* If Vac. not used in time $\rightarrow$ TSS / Death occurs. (Toxic shock synd.)
Measles & BCG mainly.

★ ★ COLD CHAIN :- [CC]

* Vaccine stored at $+2 \longleftrightarrow +8^{\circ}\text{C}$
except $\rightarrow$ YF $-30 \longleftrightarrow +5^{\circ}\text{C}$
OPV for long time $-20^{\circ}\text{C} \longleftrightarrow -40^{\circ}\text{C}$
 $\hookrightarrow$ Urban Vaccine

* DPT get frozen $\rightarrow$ discards

✓ Med. Case & Hospital

✓ CHC (Community Health Centre)

✓ PHC

X Sub centre $\rightarrow$ Vaccine carriers, Day Carriers

X Village $\rightarrow$ Ice Pack $\rightarrow$ 340ml Capacity, 2 Hole to keep Vaccine, Nothing to be add to water.

Cold chain at PHC stored in =

$\Rightarrow$ ILR (Ice Lined Refrigerator) $\rightarrow$ 140L @ PHC

at $+2 \longleftrightarrow +8^{\circ}\text{C}$ measured by $\rightarrow$ only 8 hrs/day constant electricity & ILR can maintain Vaccine temp. whole day.

Dial Thermometers

Thermocouple's principle

Twice/day

* Reverse CC $\rightarrow$ Polio stool Sample $\rightarrow$ Red Vaccine Carriers Used.
 $+2 - +8^{\circ}\text{C}$

* Warm chain $\rightarrow$ LBW / Prenatal

Kangaroo Mother Case (KMC) $\leftarrow$ Neonatal Hypothermia

Incubators Not Available

BCG (bacterin) upto 1 yrs.

HBV

OPV

Measles

Vit-A

DT $\rightarrow$ classmate upto 7 yrs.

BCG

DANISH - 1331 strain

(from M. Bovis & Reg. 13 yrs to Produce)

YF

17-D strain

Rubella

RA-27/3 strain

Measles

EDMONSTON ZAGREB strain

Rabies

fixed viral strain

Mumps

JERYLL LYNN strain

Anti-HIV

ANKARA strain

Anti-Malaria

Lytic COCKTAIL / SPF 66 S

H₁N₁ killed V.

A7 / CALIFORNIA strain

JE live V.

SA-14-14-2 st.

JE killed V.

NAKAYAMA st.

BEIJING strain

Vaccinia V.

OKA st.

Typhosal V.

Ty 21 a st.

★ ★ Thermolability =

— Most Thermolabile =

Reconstituted

BCG

> YF > OPV > BCG > TT

* Least Thermolabile - TT

(Tetanus)

Measles

MMR

* Most freeze Sensitive = Hep-B

NIS (National Immunisation Schedule)

Birth

1st

BCG, OPV-0, Hep-B

6 wk

→ DPT₁, OPV₁, Hep-B₁

10

DPT₂, OPV₂, Hep-B₂

14

DPT₃, OPV₃, Hep-B₃

9m

Measles V., Vit-A (1,00,000 IU)

every 6m

→ Vit-A (2,00,000 each) till 5 ys.

* Total Vit-A dose

classmate

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js → TToxoid

js → TT → continue in ♀

Total doses = OPV → 5
 0, 6, 14 wk
 6, 10, 14 wk
 TT → 7
 Hep. B → 3
 D → 5
 P → 4
 MMR
 Measles → 1
 BCG → 1
 JE → 1
 Vit-A → 9

all live vac. need one dose except → OPV

Al(OH)₃ in DPT → Adjuvant (↑Antigenicity)

MgCl₂ in OPV → Thermo-STABILIZER

Thiomersal in DPT → Preservative

BCG	OPV	DPT	HBV	Measles	Vit.A	Rabies
(Interv.) (≥28 days)	2 drops	0.5ml	0.5ml	0.5ml	1/2 ml	1 ml
0.1 ml	0.1 ml	i/m	i/m	SC	ORAL	i/m
i/d	ORAL			(vastus lateralis)		Deltoid
① del Hoid	-	Lateral Thigh				
				1,00,000 IU/ml		

>Efficacy:-

BCG → 0-80%

Measles → >85%

%. Rubella → >95% (Highest Efficacy)

Rabies V. → Post exposure Prophylaxis

Day- 0, 3, 7, 14, 28, 90

Starting of Vaccination → dog dies in 10 day
 continue Schedule

Pre-exposure prophylaxis → Day 0, 7, 28

in Veterian doc → After Bite

Dose of Rabies Ig

Human Ig

20 IU/kg

1200 IU

Equine Ig

40 IU/kg

 around wound → Rest in opposite Deltoid (Vaccine)

- * all Vertebrate Mammalian Bite cause Rabies Except = Rat also Man BAT

- * Human-Human transmission of Rabies possible but Not d/t Bite by Organ transplant

→ Suturing is C/I after Bite
 Best ^{first Aid} washing w/ Soap & Water.

★ Preventive OBS, RED, GERIATRICS :-

Indian Reference Man

Indian Ref. Woman

Age	18-29 y	18-29 ys.
Weight	60 kg	55 kg
BMI	20.3	21.2
H	1.73 m	1.61 m

8 hrs of sleep +
 8 hrs of Moderate activity +
 2 hr recreation +
 6 hr of sitting & Moving

Energy Req.

	♂	♀ → Protein Req
Sedentary	2300	1900 55
Moderate	2700	2200 55
Heavy	3500	2900 55

Protein Req.

0.83 g/kg/day

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Addⁿ energy Req.

Pregnancy	+350	+28 g/d
Lactat ⁿ	+600	+19 g/d
0-6 m.		
6-12 m	+520	+13 g/d

Q → Sedentary ♀ become pregnant → total = ?

Q → Folic Acid Req. in Pregnancy → 500 mcg/d

I₂ → >250 mcg/d

(lactatⁿ) Ca⁺² " + Lactatⁿ → 1200 mg/d

21 mg/day Fe⁺² " Pregnancy → 35 mg/day

Q Vit. A Req. → Adult → 600 mcg = 2400 IU

Pregnancy → 800 mcg

Lactatⁿ → 950 mcg

Retinol

4800 IU

Energy Req. of Infants

0-6 m — 92 kcal/kg/d

6-12 m — 80 "

(β-carotene)

★ ★ ANTE NATAL CARE :-

(Ideal)

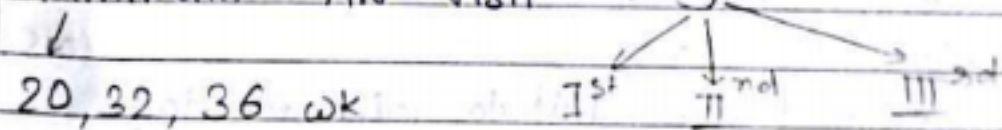
* Antenatal Visit → Recommended AN Visit → 13

0-7 m POG → once/month

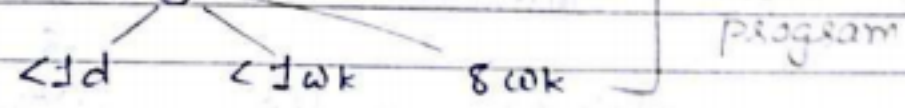
8th m POG → 2/month

9th m — — — → 1/week

→ Minimum AN visit → 3



* PN visit → 3



RCH program

→ WHO Recommended → AN visit = minimum - 4

classmate

Time of

26 36

Avg. wt gain in Pregnancy by Indian ♀
10 / 12 / 14 / 16

but Poor Indian ♀ → 6.5 kg

Globally wt. Gain → 11 kg.

AT RISK MOTHERS :-

1. Elderly Primigravida (>30 yrs)
Short stature Primigravida <140 cm
Grand Multipara $\geq 5^{\text{th}}$
Twins (1 in 80)
Anemia - m/c = Dimorphic (Fe^{+} + folic Acid)
APH
Toxemia
DM, HTN
Previous H/O IUGR, IUD, MRP (Manual Removal Placenta)
Malpresentation

AT RISK INFANTS

1. Birth wt < 2.5 kg
2. Birth asphyxia ≥ 5
3. Twins
4. Working mother
5. Single parent
6. Artificial feeding
7. Failure to thrive (fail to gain wt. for 3 successive months)
8. PEM / Diarrhea

IFA tables

	Iron	FA
Adult	100 mg	500 mg
Kid	20 mg	100 mg
	1-tab/d x 100 day/yr. (0-5yr)	

8. $T^{\circ} \geq 38^{\circ}\text{C}$

— DANGER SIGNALS —

1. PPH
2. Prolapse of Hand/cord
3. Placenta not separated in $\frac{1}{2}$ hr (30 mins)
4. Progress of labour slow/Absent
5. MSL (Meconium stained liq.)
7. Excessive SHOW/Bleed.

FirstRanker's choice
 Fe¹² Actual 2.8 mg/d
 Luciatⁿ 21
 www.FirstRanker.com IFA www.FirstRanker.com
 38 100
 DATE

♀ → Follic Acid - 500 mcg (1 tab) / day X 100 days
 (2nd Trimester) (4-6 m POG)

Anemia - 2, 3/day → 2^o preventⁿ

Rhesus Isoimmunisation - in 2nd preg.
 but can occur in 1st preg.

Mismatched Blood Previous H/O
 Transfusion History Abostⁿ

→ Anti-D globulin at ① 28 wk POG &
 ② 72 hrs Post delivery. - 1st Pregnancy

TT in Pregnancy → 2 doses (1 month gap)
 4 m & 5 m POG
 16-20 wk 20-24 wk POG

Both ↓
 Given → total duratⁿ of Botectⁿ → 5 yrs.

→ so any other subsequent Preg in Next -5 yrs.

so give 1 BOOSTER dose in 7 yrs = 280
 → child born of Unimmunized ♀ ⇒ 750 IU Hepatogus Serum in 6 hrs

* Birth Weight = day=0 day=10

Avg. BW India → 2.8 kg

26% LBW → <2.5 kg

India POG - 28 wk → <2.5 kg

BW double at → 5 month

BW Triple at → 1 yr.

BW Quadruple at → 2 yrs.

VLBW = <1.5

ELBW = <1

field Instrument to measure BW → Salter's Scale

Birth length =

Avg BL India = 50 cm

Double at = 4½ yrs. Age

Least count
 = 0.1 kg

classical at Completn of Term

- ys. H ↑ by
- 1 → 25 cm
 - 2 → 12 cm
 - 3 → 9 cm
 - 4 → 7 cm
 - 5 → 6 cm

for BL = Infantometers
final H. ♂ → 18 y } Adult Ht.
final H. ♀ → 16.5 y } by
Stadiometers

BREAST FEEDING

all is true abt Breast Milk except

X Breast Milk is Ref. Protein

Ca²⁺ absorptⁿ Higher than Cow's milk

X Max milk output at 12 m lactatⁿ

Coeff. of Iron Uptake - 70%

Egg - Reference Protein

Max output → 5-6 m lactatⁿ

→ Breast Milk is Ref. protein for making formula feed

	India	World
Exclusive B.F.	0-6 m	0-4 m
B.F.	0-2 ys.	0-1 ys.

	India	World
Newborn can't be given	X Cow's milk X Honey (sterile) X Water X Sugar-Solut ⁿ	Can be Given ✓ OPV ✓ Medicat ⁿ ✓ ORS ✓ Vitamins

Most Abundant Ig in B. Milk - IgA + IgD

" " Colostsum → IgA

first Milk

Immune Milk

Bee stings

FA exclusive to B. Milk → DHA

Docosa Hexanoic A.

Energy contain in
classmate B. Milk

Protein content in B. Milk $\rightarrow 1.1 \text{ g/100 ml}$

Vit most deficit in B. Milk $\rightarrow$ Vit. D $\rightarrow$ Sunlight

" " " in Milk $\rightarrow$ Vit-C

Vit-D available in sufficient quantity all except
 fish fat
 Shark liver oil
 ✓ Milk
 Egg.

EBM (Expressed B. Milk) storage Guidelines

In Refrigerators $\rightarrow$ up to 24 hrs

Room T $^{\circ}$ $\rightarrow$ 6-8 hrs

Freezers $\rightarrow$ 3 months

B. feeding Initiat n = (ASAP)

After Normal Vaginal del. $\rightarrow$ As Soon As Possible
or within 1 hr (max)

After C s $\rightarrow$ ASAP / 4 hrs (max)

After NVD $\rightarrow$ at delivery table

(Oxytocin - $\downarrow$ PPH)

$\text{Ca}^{+2}/\text{PO}_4^{-2}$ Ratio $\uparrow$

B. Milk

$\uparrow$ in lactose

Linoleic Fe^{+2}

Linolenic Water

Cysteine, Taurine, PUFA

Cow's Milk

$\uparrow$ in Protein

Fat

Energy

Ca^{+2}

Na^{+2}

Methionine

(70%)

$\rightarrow$ B. Milk has Higher Fe^{+2} & Higher Bioavailability

" " Lower Ca^{+2} & Higher "

* Growth & development

Acute + Chronic

Best Indicators of Growth in child → Weight
→ W for Age

" Nutritional status } W/W for Age

Measured by Shaker's Tape ← Mid Arm Circumference (MAC)

Best Indicator " Adult → BMI

GROWTH CHARTS =

Scientist → DAVID MORLEY

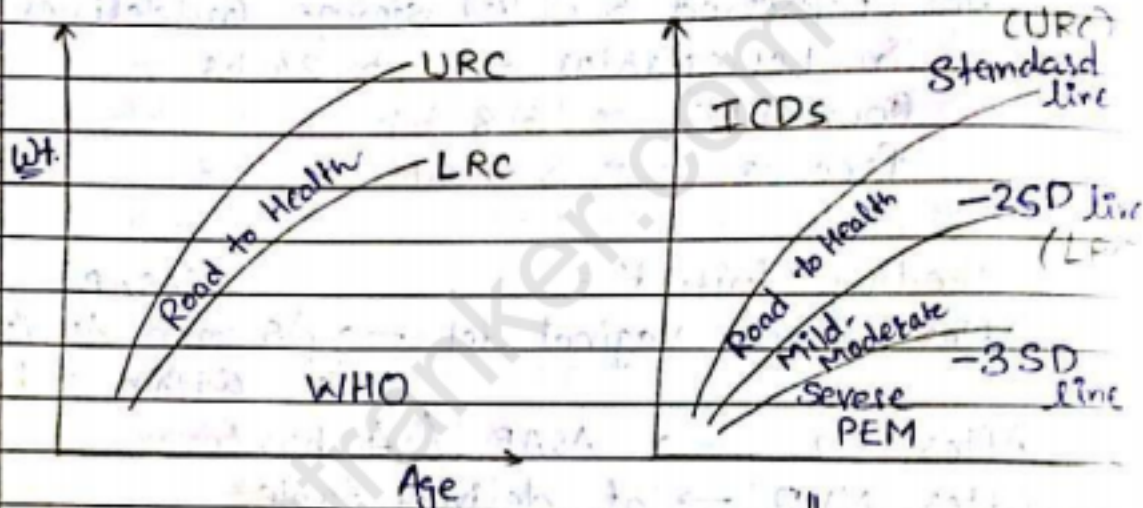
Grading PEM

80% - I

70% - II

60% = III

<50 → IV



URC → 50th Percentile Boys

LRC → 3rd percentile for Girls

Integrated child developmental Services (1975)

LRC = 80% URC

LRC lies 2SD below URC

Head of ICDS Anganwadi (AW)

→ 1 CD (community dev.) for Block
100 Villages & 1,00,000 pop.
CD = 5320 in India

1 AW - 400-800 pop. Plain
1 AW - 300-800 pop. Hill
1 mini AWC 150

★ Beneficiaries :-

→ 1 = 0-6 yrs child

2 = Preg. - Lact. ♀

3 = 15-45 yrs ♀

4 = Adolescent ♀

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functⁿ =

- 1 = face food Supp
- 2 = family planning
- 3 = Immunisation

Calories $\frac{1}{3}$ + Protein $\frac{1}{2}$
 15-45 500 kcal 20-25 g Prote
 Reproductive
 Cereals - 150 grams

4 = Non-formal Bee-school educatⁿ

	0-14	200	6-8
	1-6	300	8-10
♀/♂		500	20-25
Malnourish - shed child		600	16-20

Mid Day Meal Prog. (MDMP)

→ 6 + Age Gp

and Calories $\frac{1}{3}$ + Proteins $\frac{1}{2}$

75 gm - Cereals 300 kcal + 12-15 g Protein
 90 gm - Pulses
 10 gm - leafy / Non-leafy Vegetables
 8 gm - oil + FATS
 Cereals - 100 grams, or 75?

School Health: (examinatⁿ every 6 months)

Doors + Window $\geq 25\%$ of floor Area

Desk Minus type

1 class < 40 student

Per Capita Space > 10 sq. ft

1 Usinal / 60 & 1 Latrine / 100

freq. of School Health Examinatⁿ once / 6 month

15 yrs child has mental age 5 yrs. IQ = ?

$$IQ = \frac{\text{Mental Age}}{\text{Chronical Age (Actual)}} \times 100 = \frac{5}{15} \times 100 = 33$$

Intesniatⁿ IQ

Idiot : 0-24

Imbecile : 25-49

Moron : 50-69

low N : 70-79

Borderline : 80-89

Normal : 90-109

Superior : 110-119

V. sup. : 120-139

Near Genius : ≥ 140

Mental Retardatⁿ
Classificatⁿ

Normal : ≥ 70

m/c Mild : 50-69

9 in India Moderate : 35-49

Severe : 21-34

Profound : ≤ 20

m/c/c = Down Syndrome

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Normal IQ = 90 +

Normal IQ = 90 +

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★ Geriatric

% populatⁿ > 60 yrs India = 8.2 %
m/c/c of death > 70 yrs.
India → CVD.

DEMOGRAPHY

Populatⁿ enumeratⁿ = 9th - 28th Feb, 2011

census — every 10 yrs. → 28th Feb Night →
Last → 2011 — 15th census Houseless Populatⁿ

New

Inclusion — 10 fingerprints → 3 times for
— Iris Scan
— Unique ID numbers / Aadhar
— National populatⁿ Register.

★ Census stop → Date-time on which populatⁿ
count is given
✓
01 March
(00.00 hrs)

Total Pop. = 1210 Million

Highest UP (16%)

lowest Lakshadweep (0.01%)

State & Highest Sex Ratio → Kerala (1084)

Union territory & Highest SR → Pondicherry (1031)

Lowest SR → Haryana (877)

UT & lowest → Diu - Daman (618)

Literacy Rate = $\frac{\text{No. of Literates}}{\text{Total Populat^{n}} \geq 7y} \times 100$

India = 74 % — Males 82 % (4/5)

Growth Rate (India) → Decadal 17.64% Annual (CBR-CDR) 1.64%

53% Max - Daman & Diu

0.47% Min - Nagaland.

Very Rapid Growth Phase (1.5-2%)

% of populatⁿ Urban - 27.4

% " 0-5 yrs - 10

% " >60 yrs - 8.2

CDR (Crude death Rate) = $\frac{\text{Deaths} \times 1000}{\text{Mid Year Populat}^n}$
(7) " 1st July "

CBR = $\frac{\text{No. of Birth} \times 1000}{\text{MYP}}$
(22)

GR = $\frac{\text{CBR} - \text{CDR}}{1000} \times 100$
Highest = Liberia (4.5)
lowest → Cook's Island (-2.23%)

demographic Cycle based on CBR & CDR

stage I - High stationary

II - Early expanding

India → III - late expanding

IV - low stationary

Russia } V - Declining

Singapore

Hungary

France

Germany

* No. of children / 1000 women of Reproductive Age

k/a = GFR (General fertility Rate)

(TFR)
⑥ Total Fertility Rate = total no. of children borne (Complete family size) by a female
Rate = $\frac{\text{total no. of Girl born}}{\text{female}}$

If TFR = 4, GPR = ?

$$GRR / NRR \sim \frac{1}{2} TFR$$

$$CBR = (8 TFR) + 1$$

e.g. CBR = $8 \times 2.2 + 1 = 18.6$

→ Goal TFR 2.1 by 2010 (Current = 2.6)
Goal NRR 1 by 2010

- Q Couple protectⁿ Rate - > 60%
- Q Best contraceptive for NRR-1 ⇒ Sterilization
- Q India's populatⁿ will stabilize in 2045

NUTRITION

Macro
elements
gm

Micro
Elements
mg

Trace
Nutrients
mcg

Carbo.
Fat
Protein

Vi-A
Fe¹²
I₂
Zn¹²
Ca¹²

energy provided - F > P > C

Reducing order of Importance = P > F > C

* Balanced diet (15-20%) (15-30%) 50-70%

* Prudent diet = (to prevent CHD)

$$\frac{LDL}{HDL} = 3.5$$

GOAL = Total cholesterol / HDL < 3.5

① Total fat intake < 30%

② Total Sat. fat intake < 10%

③ Total Saturated fat intake < 5g/d

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① Total cholesterol intake $< 200 \text{ mg/d}$

② Avoid alcohol

Most direct Marker of CHD $\rightarrow$ LDL

Most sensitive marker Apo A $\uparrow$ & B

Total cholesterol level $< 200 \text{ mg/dl}$

Desirable LDL $< 100 \text{ mg/dl}$

HDL $> 30 \text{ mg/dl}$

Protein

Quantity

Quality

PER
(Protein energy Ratio)

Net Protein Utilization (NPU)

(Highest - NPU = Egg (96)

Highest Quantity

Milk (81)

Soyabean

Soyabean

Fish

(55)

Chicken

Max among

Mutton

Pulses.

Conditionally essential AA (CEAA) = Non-essential

AA become essential when precursors are

limited - e.g. - Phenylalanine $\rightarrow$ Tyrosine

Methionine $\rightarrow$ Cys

NE

* Limited Amino Acid *

Maize $\rightarrow$ Tryptophan

+ Lysine

CMPL

Wheat $\rightarrow$ Threonine + Lysine

Pulses $\rightarrow$ Meth. + Cysteine

EFA :

Linoleic (most EFA) $\rightarrow$ Phrenoderma - (Toad skin)

Linolenic

1 Alopecia

Arachidonic

2 Diarrhea

Eicosapentaenoic A.

3 Sterility

classmate

(EPA)

4 Brittle Nail

Zn^{+2} = Acrodermatitis Enteropathy

EFA → Max
 Linoleic
 Arachidonic
 PUFA

Safflower oil
 Sunflower
 Corn oil
 Soyabean oil

Saturated
 f A max

Coconut oil
 least EFA

- * MUFA = Groundnut oil
- * Linolenic Acid → Flaxseed oil > Soyabean
- * EPA → fish oils

Vit. A → ① Halibut fish liver oil

Vi-D → Cod liver oil

② Carrots
 ③ Mango

→ No plant Source → Vit. D, Vit. B₁₂

- * Vit-C → Amla Indian Gooseberry or
 Non-Citrus → Guava Citrus flav.
 Vegetable → Cabbage

POOR IN

Milk → Vit-C + Fe
 B. Milk → Vit-D
 EGG → Vit-C + Carbohydrate
 Fish → Iodine + Carbs
 Meat → Ca²⁺

Q Golden Rice Rich in Fe²⁺ & Vit-A
 RAGI " " Calcium

Richest Source of Iron → Pistachio

Twin fortified Salt → Fe⁺ & Iodine

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Vitamin - A

Xerophthalmia → Earliest Sx = Night Blindness

Earliest Manifestation = "

Earliest Sign = Conjunctival Xerosis

Mos

Receding Banks after Sea Tide

* Public H. Problem if prevalence of

Night Blindness $\geq 1\%$

Most Specific → Bitot's SPOTS $> 0.5\%$ (in sclera)

> 0.05 - Corneal Ulcer

> 0.01 - Keratomalacia
Corneal xerosis.

Vit - B₁ (Thiamine) → Rich Source = **Gingelly Seeds**

Best Bet

DRY → CNS

Wet → CVS

Infantile → 4-8 month Age

Polished

Rice eaters

Wernicke → Alcoholics

Vit - B₂ - Rich Source = **Sheep Liver**

ARIBOflavinosis

Cheilosis

Angular Stomatitis
most characteristic

Atrophic Glossitis
Geographic tongue

Vit - B₃

Pellagra → Dementia, Diarr, Dermatitis, Death.
around Neck

Maize eaters

excess "leucine"

"Casal's Necklace"

Tryptophan → B₃

60 : 1

Vit - B₅ = Burning feet / Sole Syndrome

Vit - B₁₂

- ① Megaloblastic and Pernicious Anemia
- ② Subacute Combined degeneration of Spinal Cord (SCDSC)
- ③ Peripheral Neuropathy

↓
other Vit - E
fixed Ataxia

Vit - C → def. Scurvy

- ✓ Gum Bleeding
- ✗ Sterility — def. of → Vit - E, Zn²⁺, EFA
- ✓ Fractures
- ✓ Delayed Wound Healing

→ Antioxidant - A, C, E

→ Vit - D —
D₁ - calciferol
D₂ - Ergocalciferol
D₃ - Cholecalciferol

5 min / day Sunlight (in Morning)

↑ UV

def. — Rickets (child)
OM, OP (Adult)

IRON

Most Sensitive tool of Iron Status - S. ferritin

→ Anemia Cut-offs

Adult Male	< 13 gm%	MCNC Cut off = 34%
female	< 12	
Pregnancy	< 11	
0-6 yrs	< 11	
6-14 yrs	< 12	

* Inhibitors of Fe²⁺ Uptake

- Phytates
- Tannates
- Oxalates
- Ca²⁺
- Tetracycline

Induces

Vit ↓
C

PAGE

(< 5% Fe²⁺ Abs. in Intestine)

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<u>Iodine</u> >150 mcg/d	<u>Iodine</u> 0.5-0.8 mg/L (ppm) <u>Double edge sword</u>
Use Salt f. Goiter Hypothyroidism Cretinism, still born, Abortⁿ, IUGR / IUD, Mental Retardatⁿ	Water Dental Caries = deficiency of Iodine 3-6 ppm = Skeletal fluorosis 10⁺ ppm = Crippling chronic fluorosis

ss <u>Iodism</u>	<u>Aluminium</u> is Major defluorinating Agent fluorosis
Level of Iodizatⁿ of Salt	defluorinatⁿ = NALGONDA tech.
ppm at Productⁿ level	Lime → Alum → Bleaching powder.
ppm at Consumer level.	to check Milk Contaminatⁿ → Methylene Blue Reductⁿ Test (MBRT) before Pasturizatⁿ it is done

Pasturizatⁿ of Milk

Holder / Vat Method $\xrightarrow{\text{mlc}}$ 63-66°C x 30 minutes

High Temp Short Time (HTST) / FLASH method

72°C x 15 sec.

Ultra High T. (UHT) - 125°C x 1-2 sec.

Best method → Boiling

To check Sufficiency of Pasturizatⁿ

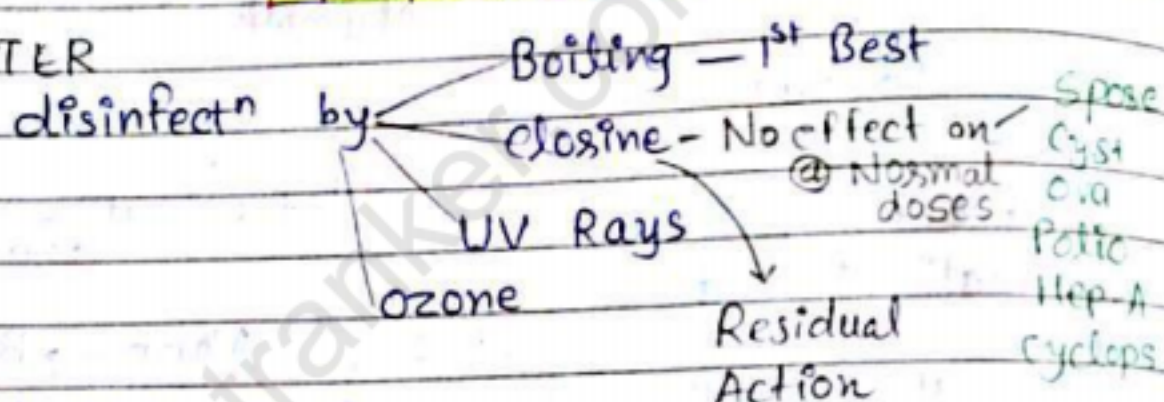
- ① PHOSPHATASE test
- ② Coliform count → std is coliform absent in 1ml
- ③ Standard Plate Count → 630,000 bacteria

Dry Papaya Seeds in BLACK Peppes.

- ★ **FOOD STANDARDS :-**
- ① Codex Alimentarius ← Indian food is Based on
 - ② Ag Mark
 - ③ PFA Act 1954 standards
 - ④ BIS (Bureau of Indian Stds.)

ENVIRONMENT

WATER



Residual Cl_2 level measured by

- Horscock's Apparatus
- Polarimeters
- ✓ OT test
- Chromatography
- Cl_2 demand → Blue colour (Indicates - STARCH IODINE)

free Cl_2 / Residual → CHLOROSCOPE

Interference to Fe^{+3} , Mn , Nitrites.

← OT test

level of free Cl_2
" Total Cl_2
(free + combined)

ortho Toluidine Arsenide
OTA Test

level of free Cl_2
" Combined Cl_2

* Combined Cl_2 / Total Cl_2 can be

Drinking water

DATE

≥ 0.5 mg/L $\times (1 \text{ hg})$ - contact

→ kill Cyclops, Polio ≥ 2.0 mg/L v/h

→ Swimming pool ≥ 1.0 mg/L v/h
to kill Hep A

Post disaster > 0.7

→ Total chlorides level in Drinking Water
 < 600 mg/L

Nitrates < 50 mg/L → Remote

Nitrates < 3 mg/L → Recent $\rightarrow$ may lead to BLUE Baby Synd.

① levels

BACTERIAL INDICATORS =

- 1 E. coli - Best → Most Reliable for fecal Contamination of Water
- 2 fecal streptococci → Recent
- 3 Clostridium Perfringens / Welchii → Remote

→ Max. permissible level of E. coli in Drinking water total = 0 E. coli / 100 ml $\Rightarrow$ Potable Water
(Coliform Count)

Hardness of Water $\rightarrow$ k/a Soap destroying power of Water.

Temporary

Permanent

Bicarbonate

Sulfate

to Remove $\rightarrow$ Boiling, Lime, Na_2CO_3

Chlorides

Nitrates

$\rightarrow$ add

Na_2CO_3

→ Softening of Water Recommended if Hardness > 150 mg/L (> 3 meq/L)

→ Most Undesirable metal in Water $\rightarrow$ Lead.

Problem Villages

- ① Water Source located distance - > 1.6 kms
depth > 15 m
elevatⁿ > 100 m

② Presence of excess Iron / Salt / fluoride / Arsenic

→ locatⁿ of similar well from Source of

AIR

Soiling Index for Air Quality.

Air Pollutⁿ Indicators

Soiling Index

SO₂ (Sulfur dioxide) — Best Chemical but

CO Best Biological → "Lichens"

CO₂

Suspended Particulate Matter

Air pollutⁿ IndexNO₂COFF. OF HAZE^s

→ KATA thermometers — low Air Velocity > Cooling Power of Air.

Hygrometers } — Humidity

→ Psychrometers }

Anemometers — Air Velocity

Wind Vane — Air directⁿ

Simon's Rain Gauge → Snow, Rain,

SOUND

Noise level permitted in Hospital = 20-35 dB

Max permissible sound level < 85 dB } → measured

Auditory fatigue above > 90 dB } by "Sound

Permanent Hearing loss > 100 dB } level meter

Tympanic mem. Rupture > 150 dB }

HOUSE

- Overcrowding Gitesia. } Standard
 No. of Person / Room > 2 }
 floor space / person $< 70 - 90 \text{ sq. ft}$ } $> 500 \text{ cu ft}$
 Absence Sex Separation $> 9 \text{ yrs Age.}$ } cubic space

DOC = Systemic Scabies = Ivermectine

WASTE

- 1 Refuse → Solid Waste = living Room, Street, Indus.
- 2 Garbage → Kitchen W.
- 3 Sewage → Liq. - contain Human excrete (Black Waters)
- 4 Sillage → " " (Grey Waters) but White water - Drinking

Contain - 99.9 % Water

Best Indicator for Sewage = BOD (Biological O₂ demand)

Strong Sewage BOD $> 300 \text{ mg/L}$

Best method of disposal → Sanitary landfill / controlled tipping.

★ ENTOMOLOGY ★

Sand fly / Phlebotamus → Kala Azar, ORAYA fever,
 Sand fly fever, Oriental Sore

Tsetse fly / Glossina → African Sleeping Sickness / Trypanosoma

Assassin / Kissing Bug

Reduviid Bug / Triatominae → Chagas ds. / American

Rat flea / Xenopsylla → Plague, Chiggers, H. climuta, Endemic Typhus

louse → Epidemic T., Trench f., Relapsing F. Pediculosis

Soft Tick → Relapsing F. Q-fever
 KFD outside India.

Black fly / Simulium

Pest

www.FirstRanker.com

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	Anopheles	Culex	Aedes	Mansonia
Disease	Malaria	JE Filariasis (Lymphatic)	YF Dengue CGE (chicken Gunia)	BRUGIAN filariasis

Q → Any Mosquito can transmit → **FILARIASIS**
fly → 3-5 km 11 km 100 m

Breeding	Clean Water	Disty Water	Artificial collect ⁿ of Rain Water	Aquatic Pond
EGG	Boat Shape	Small clustress Siphon Tube	Laid Singly Cigar Shaped	Laid in Stages Shaped Clustress
Larvae	Rest parallel to water surface	Rest perpendicular to water	Rest in Dark Bottom corner	Rest attached to Rootlets of Plants

Q → WHO YF control Guidelines

- ① 400 m around Airpost free of Aedes
- ② BRETEAU Index (A.egypti index) < 1 %

* Mosquito Control :-

Biological → Gambusia fish ¹Lebister ²Reticulata ³Poecilia

Physical → Mosq. Nets → Size of Mesh (hole) 0.0475 inch

chemical → DDT
Nerve Poison → Pyrethrum
Least toxic for Man → Malathion
Patis Green
Anti Adult → Nerve / Paragon.
Anti-larval → ^{also} fenthion + Mineral oil (stomach Poison)

→ Least toxic Insecticide → ABATE (Temephos)
* Mosquito = life span → 8-34 day.

Q → DDT → 70-80% - Pasapasa Isomer
No classmate Repellent Actⁿ Take Several Residual
Synthesis → Ziedler
Insecticidal Property → Fenthion + Mineral oil

Area under curve under 2SD on either side of Mean in Normal Curve 95%

VARIABLES

Quantitative	Qualitative
can be measured & compared	can't be measured and compared
H, W, Hb, B.Sugar, C° BMI, C° , Pulse, BP, Posity	Pain, ABO Blood Gr., Rh DISEASE, Sex $\frac{M}{F}$
Continuous	Discrete
Many possible value & in b/w values	few possible value & No in b/w
H, Wt, Hb, B.Sugar $170 - 170.5$ BMI, C° Pulse Rate ($145 - 2 \text{ min} - 72.5$) All india Result	ABO Blood Gr., Rh Blood DM, Anemia, Severity of Anemia, Sex, Multiple choice ques, Result Disability

W $\rightarrow$ Cont + Quan
ABO $\rightarrow$ Dis + Qualit.
Posity $\rightarrow$ Dis + Quan.

Dichotomous	Polytomous
Gendes Rh Blood Gr. B H - ? - 166 Tachycardia Result	>2 possible H BMI W PR Hb BP Anemia/Severity Mca

Quantitative	Scales	Quantitative
Categorical		Dimensional
Normal Names	Ordinal Order	Metric Measurement
Anemia	TNM Staging	W $\text{C}^{\circ}/\text{F}^{\circ}$
d/d of liver ds.	Severity Anemia	H BP, BMI
Sex of child	Obesity Grading	Hb
	JNC VII HTG	

DATE

Measures of Central Tendency

$$\text{Mean} = \frac{\text{Sum}}{n} = \frac{42}{9} = 4.6 \quad \text{Mark of 9 students} \\ 9, 3, 3, 1, 0, 6, 8, 5, 7 = 41$$

Statistical Avg.

V
Median = Middle Value in Ascending order or

$$0, 1, 3, 3, \underline{5}, 6, 7, 8, 9 \rightarrow 5.5 \quad \left(\frac{5+6}{2} \right)$$

V
Mode = Most frequent Value $\rightarrow 3$

$\rightarrow$ If even $n \rightarrow$ Median is Avg. of 2 middle value

$\rightarrow$ If Mode = 3, 9 $\Rightarrow$ Bimodal

$3+9/2 \Rightarrow 6 \rightarrow$ Unimodal

Q In class $n=10$ students, Mean W = 18.2 kg
a new student (18 kg) joins today Mean W

$$\frac{182}{10} \rightarrow \frac{182+18}{11} = 18.11 \text{ kg}$$

Q A new student was wrongly recorded 2.0

$$\frac{182+18}{10} = \frac{200}{10} = 20 \text{ kg}$$

Q Wt of 5 student in class } Mean W = 80 kg
76, 78, X, 82, 84 kg

$$\text{So } X = ?$$

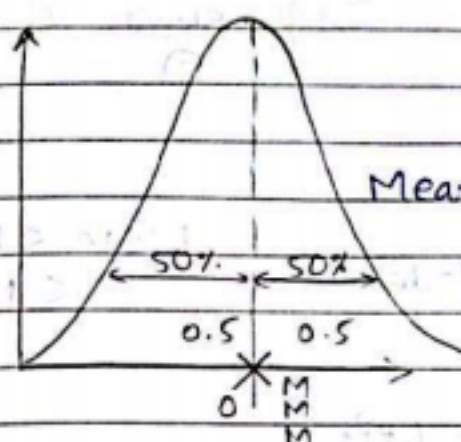
$$\frac{76+78+X+82+84}{5} = 80$$

Q Mean is 10 gm %, Median = 12.6 gm %
Mode = ?

$$\text{Mode} = 3 \times \text{Median} - 2 \times \text{Mean}$$

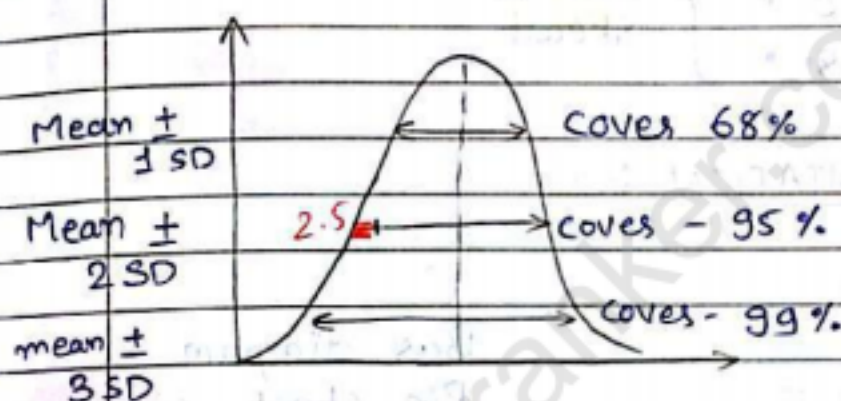
Gaussian / Standard / NORMAL DISTRIBUTION :-

⇒ shape of Normal Curve = Bilateral Symmetrical Bell shaped.
(large Sample Size only)



Mean = Median = Mode = Coincidence

Mean = 0, SD = 1.



Q. $n = 100$ Weight $SD_w = 5$ kg
mean $W = 70$ kg
95% lie b/w 60 - 80 kg.

$$\mu \pm 2\sigma = 95\%$$

$$70 \pm 2(5) = 95\% \rightarrow 70 \pm 10 = 95\%$$

Q. How many b/w 60-70 kg = $47.5\%(50 - 2.5)$

68% → 65 - 75 kg 50% of total > 70 kg

99% → 55 - 85 kg

$n = 100$, Hb

Mean Hb = 14.8 gm %

$SD_{Hb} = 0.2$ gm %

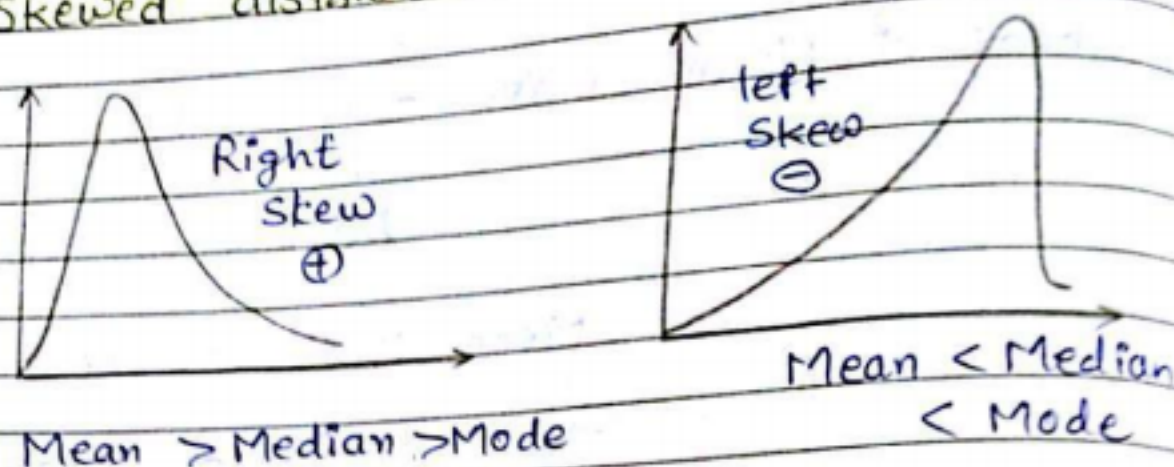
95% = 14.4 -

15.2

gm %

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Skewed distribul



Q →

Mean	12.0 gm%	} Left skewed
Median	14.0 "	
Mode	14.8 "	

* DATA PRESENTATION :-

Quantitative	Qualitative
Histogram	Bar diagram
fseq. Polygon	Pie chart
fseq. Curve	Map
line diagram	Pictogram
Ogive (cum fseq.)	
Scatter diagram	

used to depict
Cosselatⁿ (Relationship b/w two
quantitative variatⁿ)

Cosselatⁿ Coefficient

- H & W → Positive Coss. = $r \rightarrow 0 < r < 1$
- Vit-A - Epithelial Ca = Negative Coss.
 $-1 < r < 0$
- Milk - lung Ca = $r = 0$

So "r"

$-1 < r < +1$	Max.
$0 < P \& L < 100$	
0	

P-value should be --

< 0.1

< 0.5

< 0.01

< 0.05 - ans

Errors in study

Type-1 errors (More Serious) → P-value is

Type-2

probably of Type-1

keep it Minimum

P-value < 5% for Significant Results.

X CS_I - Smoking - lung Ca = RR = 8 (Pvalue = 0.8)

✓ CS_{II} - " " " RR = 2 (Pval. = 0.3)

STATISTICAL Test :-

Parametric Test

Normal distributⁿ

Quantitative data

Use = Mean, SD

Non-Parametric Test

Skewed dist.

Qualitative test

%, proportⁿ, fractⁿ

Paired student T-test

Unpaired

ANOVA test

Unpaired - (3 Gp)

Unpaired data (2 Gps.)

Sign test - Paired (1 Gp)

Chi-square test

(≥ 2 Gp) → Unpaired

Compare Means in Paired data

(1 Gp.)

Before & After

Interventⁿ

Q Mean BP of gp. of HTN Pts is 146
Anti HTN drug X given for 2m. Now
mean BP = 126.4 mm Hg ⇒ Paired T-Test
2 diff ward patients - 3 gps ⇒ ANOVA test

* Chi-Square test = degree of freedom = (c-1)(r-1)

2x2 table → DOF = 1

3x6 " → DOF = 10

4x4 " → DOF = 9

Column Row

Q → Chi-Sq. test 2x2 table (DOF = 1)

classmate

Value of Chi-square

PAGE

TB Cough > 2w
Malasia fever

Sputum Smear → Stain
Peripheasal Smear
for Malasia Parasite
(TSB stain)

HIV -ERS ELISA
Rapid
Simple

WBA

Breast Ca Mammography (> 35)
Thermography
USG most sensitive
BSE (Breast Specific)
Palpatⁿ by clinician

FNAC

Cervical Ca Pap Smear
> 18yrs. every 3

Punch (Colposcopic) Biopsy

ORO-Pharyngeal Ca Bimanual
ORAL palpatⁿ

Biopsy

Lung-Ca CXR

Biopsy / CT

Prostate Ca - PSA
- DRE

Biopsy

Leprosy Any Hypoanesthesia
Skin Path

(Count lesions)
Clinical Examinatⁿ >
[slit skin Smear - Not Now
(Nose - Ear)
Stain - Modified ZN stain

DM Random BS.
FBS
PPBS
HbA_{1c}
GTT

① GTT. → Venous plasma
glucose level
> 200 mg/dl
dose of oral glucose
(2hrs) = 75 gm

Preg. → 100 g

Challenge = 50 gm

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Advantage : www.FirstRanker.com

- ① Lead Time — Early diagnosis

Prescriptive ← Screening → Prospective
for own benefit for others benefit

* Neonatal Screening for m/c disorders screened - ①^{m/c} Neonatal ↓ Thyroid

Site	Umbilical Cord	Heel Prick
------	----------------	------------

$$\text{Sensitivity} = \frac{a}{a+c} \times 100$$

$$= \frac{TP}{TP + FN} \times 100$$

		Disease	
		+	-
Result	+	TP a	FP b
	-	FN c	TN d

$$\text{Specificity} = \frac{d_{TN}}{FP + d_{TN}} \times 100$$

PPV = $\frac{a}{a+b} \times 100$ = out of those (+) Pts, how many have Disease

$$NPV = \frac{d}{C+d} \times 100$$

+ Sens = out of ^{those} diseased, how many come (+) ^{on} ST

80% Sensitivity Pap smears means
100 $\approx$ Ca $\rightarrow$ 80 Pts show (+)

80% PPV $\rightarrow$ 100% disease. Generated by CamScanner
www.FirstRanker.com

Q Sensitivity $\propto \frac{TP}{FN} \propto \frac{1}{1-FN}$

Q Specificity $\propto \frac{TN}{FP} \propto \frac{1}{1-FP}$

80	40	1 Sens. = 80%
20	60	2 specificity = 60%
		3 PPV = $\frac{80}{120} \times 100 = 66\%$
		4 NPV = $\frac{60}{80} \times 100 = 75\%$

90	90	Is this true?
10	810	X Sens = Spec. X PPV
		90% 90% 50%

Q Sensitivity is Usefulness of Screening Test $\downarrow$ most Important in Screening

Q Prevalance of HIV = $\frac{\text{Cases}}{\text{Total Pop.}} \times 100$

= $\frac{100}{1000} \times 100 = 10\%$

Q All benefits of OCP except

- Protectⁿ against Endo CA
- " " Cervical Ca $\rightarrow$ answer
- Dysmenorrhea Relief
- Regular Cycle

A Conventional Contraceptive — Use at time of Intercourse

classmate Condoms (Male), Spermicide, Jellys, etc.

female Condom 2h $\longleftrightarrow$ I $\longrightarrow$ 4hs

Vaginal sponges 4h $\longrightarrow$ I $\longrightarrow$ 4hs

Diaphragms 4h $\longleftrightarrow$ I $\longrightarrow$ 6 hrs.
(Req. Motivated educated ♀)

Intracept^m = used after Intercourse / Post coital /
Yuzpee & Larcree M. Emergency Contra.

1) Combined OCPs < 72 hr 4 $\longleftrightarrow$ 12 hr Gap 4

2) POPs < 72 hr 1 $\longleftrightarrow$ 12 hr Gap 1

3) IUD < 5 day

4) RU 486 < 72 day hrs.

? 5) High dose Estrogen X 5 days

Eligible couple $\rightarrow$ Married couple $\bar{c}$ wife 15-49 y.

EC Rate $\rightarrow$ 150-180 ECs / 1000 pop.

No. of protected couple $\times 100 = \text{CPR} = 46\%$
Total EC

Couple Protectⁿ Rate

Goal is >60% by 2010

8 $\rightarrow$ TB_p = 1000

Total EC = 180

condoms used by 29 couple

OCP = 10

IUDs = 10

03

08

CPR = $\frac{60}{180} \times 100 = 33.3\%$

* failure Rate of C / Cont. efficacy measured by
PI expressed as per HWY
100 Women Year

Male → less s/e so Used 21
 PT = 14
 HIV protectⁿ +
 Reusability ++
 Material Latex Polyurethane

Ideal Contraceptⁿ for
 Newly Married — C. CCP
 Couple living apart Meeting occasionally → Condoms
 (Adolescence)
 Teenage Girl → Condoms

IUD (Intra Uterine devices)

I st	II nd	III rd
Non-Medicated	Medicated & Bioactive	
Lippes Loop	Copper	Hormones
	CuT-7	Progestasert - 1 yr
	CuT-220 B	LNG-IUD
	CuT-380 A	
	NOVA-T	
	ML-250 CuT	

- overall IUD = 5 yr.
- Progestasert = 1 yr.
- Most effective IUD → ML-250-CuT
- Most Common WORLD IUD → CuT-380 A

Silver Containing IUD

CuT 380 A

NOVA-T

Surface Area of Cu^a (mm²) not Cu-T.

Silver / Gold

CuT-220 (B) — Size.

to check displacement

* Every CuT Radiopaque d/t ⇒ **BARIUM** PAGE

but in Need of X-Ray always do $\Rightarrow$ USG

* S/E of IUD :-

1st m/c $\rightarrow$ Bleeding $\rightarrow$ Removal $\Rightarrow$ 200mg TDS $\times$ 8 wk
 2nd m/c $\rightarrow$ Pain $\rightarrow$ Removal Analgesics
 Pregnancy $\bar{c}$ IUD
 in situ $\Rightarrow$ Removal + MTP

* Combined OCPs :-

MALA-D

5/-

Ethinyl Estradiol 0.03 mg

MALA-N

(free)

(N) Norgestrel / desogestrel 0.15 mg
 (d - Norgestrel)

Male Condom
 Curt-380A
 Vasectomy-1100/-
 Tubectomy

Absolute C/I of C.OCP = C Cancers Breast / Genital

L Liver disease

U Uterine Bleeding

T Thromboembolism

Relative C/I. *

C Cardiac ds.

Age > 40 ys

H Hypertension $\rightarrow$ Gall stones

Age > 35 ys ($\bar{f}$ Smokes)

S/E of C.OCP $\Rightarrow$ $\uparrow$ BP (HTN)

$\uparrow$ Sugar (DM)

$\uparrow$ Breast Ca

$\uparrow$ Wt. (obesity)

$\uparrow$ Cervical Ca

$\uparrow$ Cholesterol (CHD)

$\uparrow$ Hepatic Adenoma

$\uparrow$ Candidiasis

$\uparrow$ Acne- Migraine- Gall stones

$\uparrow$ Thromboembolism.

Advantage =

$\downarrow$ ovarian Cyst

$\downarrow$ IDA (Fe¹² def.)

$\downarrow$ ovarian Cancers

$\downarrow$ PID

$\downarrow$ Benign Breast ds.

$\downarrow$ Ectopic Pregnancy

classmate

fibroadenoma

PAGE

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POP / MINI Pills

- ① Intracept[™]
- ② Lactat[™]
- ③ all C/I of Combined OCP.

CENTCHROMAN / Saheli

only Non-Steroidal OCP
 contain - **CRMELOXIFEENE (SERM)**
 found in Central drug Institute
 in Lucknow
 Given - Twice / week X 3 month then
 once / week.

Gossypol

Male pill

Chinese Cotton oil

S/E = Azospermia (10%)

Oligospermia < 20 Million / High Power field

Vasectomy

Anatomical Sts. Resected Vas deference

Minimum length to be cut - > 1 cm

(∵ Property of Recanalization)

Advice → Barrier method for 3 month.

m/c/c of Vasectomy failure → Misidentification
 of Vas d. (by Surgeon)

m/c after effect → Development of
 Autoantibody to Sperm

MTP act ⇒ 1971

Indication ⇒ SETH.

Qualification

MD

DGO

OR

6m Housemanship

Exp

> 25 MTP
 experience

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* Biomedical Waste Management :-

gossy

 Human Anatomical waste (Appendix, Gall Bladder, Amputatⁿ)

Animal waste (experiments - Animal killed)

Microbiological & Biotechnological waste

live vaccines, Cultures, Serum, toxin

Wasted SHARPS - Blades, Scalpel, Needle, Glasses

Cytotoxic drugs & discarded Medicines.

(Anti cancer drugs) (Expired drugs)

Soiled waste - Gauze piece, Bandage, dressing, Swab

Solid waste - Catheter, Cannula, tubing, Syringes

 Liquid waste - (Generated after disinfectⁿ)

Incinerator Ash

Chemical waste - Reagent, Insecticide

 Yellow BAG = 1, 2, 3, 6 → Incineratⁿ, Deep Burial

Red Bag = 3, 6, 7 - Autoclaving, Microwaving, + chemical t/t

Black = 5, 9 → Secured land fill

 Blue/white = 4, 7 → Autoclaving → Best for Sharp
Microwaving

Cat-8, 10 ⇒ No Bag. Chemical t/t

 destructⁿ - shedding

1% Hypochlorite → DRAIN

 Incineratⁿ ⇒ High T° + Dry oxidatⁿ

850°C - 1° chamber

1050°C - 2° chamber

 material's
Burn easily

done for

Combustible

Moisture content

Matters

< 30%

Best method for sharp waste - **Autoclaving**
 " " for Mucousy - Recollect Recycle and Reuse

* **Autoclaving** =
 + Principle $\rightarrow$ Steam under Pressure
 $T^\circ = 121^\circ C$
 to check Sufficiency = *Bacillus stearothermophilus*

Microwaves =
 Principle $\rightarrow$ Convection currents in Heated water molecules
 2450 MHz - freq.
 12 nm - wave length.

Hot Air oven - $160^\circ C \times 1 \text{ hr.}$
 Hydroclave - $121^\circ C$
 Gamma Radiatⁿ - $200^\circ C$

* **Inertizatiⁿ** = Toxic material
 Non-toxic material $\swarrow$ CEMENT + LIME

* HIV (+) Material - Treat w/ 1% Hypochlorite

DISASTER Management :-

TRIAGE = Categorizatiⁿ of Victims of disease on likely hood of Survival.

Classifying
 Cat-1 - Highest Priority $\rightarrow$ Immediate CPR / Amputatiⁿ of
 Red 2 - High $\Rightarrow$ 6-24 hrs limb / life saving Surgery 0-6 hrs
 Y/Blue 3 - Low-Minor Non-life threatening Inj. $\oplus$
 Green 4 - least Ambulatory Pts.
 Black $\rightarrow$ Dead people + MORIBUND (abt. to die)

classmate
 * Triage give Best Result if done at early

DATE

Disasters Mitigation

- * Process aims to prevent Risk/Hazards converting to disasters.
(↓ damage d/t disasters)

- * Disasters = ≥ 30 Req. Hospital services simultaneously

m/c disease Post disasters = Acute (Diassthen) Gastroenteritis

m/c Vit - def. " - Vit - A

most imp phase in post disasters phase
is = cholera

Vaccine in post disasters phase → C/I (except = Measles)

WHO C/I vaccine " " → All but

Indicated in Health Workers. ← Specially - Typhoid, cholera, Tetanus

WHO mandatory vac. for Health personnel - Tetanus

Worst Manmade disasters ⇒ Bhopal gas tragedy

World disasters Reduct'n day = 2nd week of October.

HEALTH Care System of INDIA

1st level → first level of contact i Health Care

e.g = PHC, Subcentre

2nd level → 1st Referral level

e.g = CHC

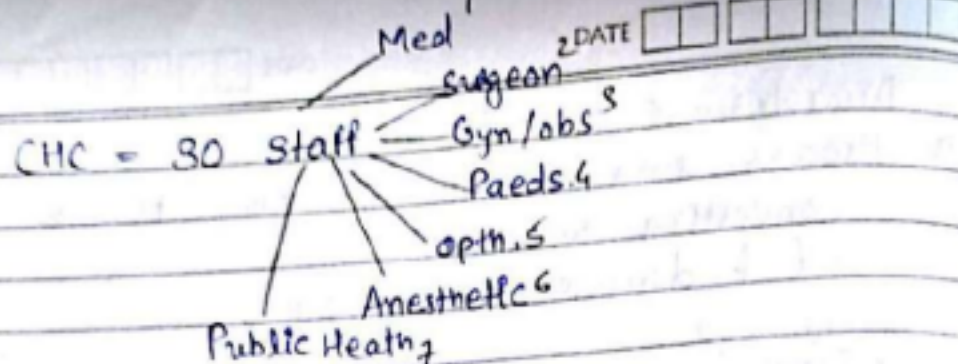
3rd level → 2nd Referral level.

e.g. = Medical college & Hospitals.

Pop. Norms

Beds

	Plains	Staff	Hilly	
Subcentres -	1/5000	3	1/3000	0
PHC -	1/30000	15 ^{MBBS}	1/20000	4-6
CHC -	1/1,20,000	30 ^{assistant}	1/80,000	30
AD -	1/400-800	2	1/300-800	0



* PHC - 15 Staff = MBBS Medical officers

1st level → 400 - Med. college
 2nd level → 4400 - CHC
 PHC → 23,000
 Sub-centre → 1,46,000
 Anganwadi → 5,78,000

* First Ref. Unit (FRU) → CHC

* SRU → Medical College

→ Grassroot level workers = Health Administrators

- * MPW (Multi Purpose workers)
- * VH G (Village Health Guide)
- * TBA (Traditional Birth attendant) ^{Community mid-wife}
- * ASHA (Accredited Social H. Activist)
- * AWW (Anganwadi workers)

	MPW	VH G	TBA	ASHA	AWW
Local Pop Norm	Subcentre	Village	Village	Village	AW
	1/5000	1/1000	1/1000	1/1000	1/400-800
Qual.		6 th pass		8 th pass	

* Main Impact Indicators of ASHA

↓ IMR

No. of TB cases ↓

No. of Leprosy ↓

PEM Rates ↓

→ ASHA training by AWW + ANM

Auxillary Nurse

Mid wife

* JSY ^{Midwife} Janani Suraksha Yojana & institutional delivery (↑ Institutional deliveries) → in below Poverty line

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1 doctor / 3500 1 UHC / 50,000

1 Nurse / 5000

1 lab tech. / 10,000

1 Pharmacist / 10,000

1 ophthalmologist / 50,000

ASHA Belongs to
National Rural (NRHM)
Health Mission
(started - 2005)
(end - 2012)

USHA = NUHM

ASHA - 1 / 1000

USHA - 1 / 2500

Primary Health Care (PHC)



free by
Govt.

STATE Medicine

H. case free by Govt Regulated by Professional
groups ⇒ **SOCIALIZED Medicine**

1st Russia -

Neuman & Vischov

8 elements of P.H. Case

- E Elemental drugs
- L Locally endemic ds. Preventⁿ - Control
- E Educatⁿ
- M Maternal & child Health
- E EPI (expanded prog. on Immunizatⁿ)
- N Nutritⁿ
- T Treatment of Common diseases
- S Safe water Supply & Sanitatⁿ

PHC ⇒ most essential drug

5 cleans of Safe delivery → to Prevent NNT
→ all a wrong except

- | | |
|---------------------------------------|---------------------------------|
| ① Clean Hands — Gloves, Carbolic Soap | ② Clean Surface — Plastic sheet |
| " Cord Surface X | ③ Cord Cut — sterile Blade |
| " Perineum X | ④ Cord tie — Thread |
| " Birth Canal X | ⑤ Cord stump — |
| " Roof/Walls X | ⑥ Water } for doctor, |
| | ⑦ Towel } |

DDK - A	B
(disposable delivery kit)	
Gloves	
Carbolic Soap	Paper Soap
Plastic sheet	X
sterile Blade	
Thread	
Instruction Card	
Gauge	
Bandages	

* freq. of visits by H. Assistant from PHC to Subcentre → Every Week

Q	MPW (♂)	MPW (♀)
	Peripheral Smears of	X
	Malaysia	
	male → Sub Centre	

OCCUPATIONAL Health ds.

Pneumoconiosis

<0.5 μ — Brownian Motⁿ — Harmless

✓ 0.5 — 3 μ → Most dangerous

3 — 5 → Mid Resp. Tract

5 — 10 → Upper Resp. Tract

>10 → Settle by Gravity

Stick to Alveoli

PAGE

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North

- Silicosis - m/c in India, m/c/c of death, m/c/c disability
- Anthraxosis → Progressive Massive fibrosis
- Asbestosis → ^{most dangerous} Mesothelioma, Lung Ca ^{Amphibole Type}
- Byssinosis → Cotton, Textile workers → m/c seen in SPINNERS
- Bagassosis → Sugar cane workers (bagasse/Molasses)
- Farmer's lung → Mouldy Hay
- Bird fancier's → Bird droppings
- Compost → Aspergillus
- Siderosis → Iron
- Stannosis → TIN

Chemical Workers' lung → Isocyanates

* Chemical control of Bagassosis by 2% Propionic Acid (of Bagasse) & keeping Moisture content > 20%

- Bagassosis → Thermoactinomyces Sacchari
- Farmer's lung → Micropolyspora
- Compost lung → Aspergillus

Occupational Cancers :-

m/c occupatⁿ Cancers in India = Skin (75%) (SCC)

Benzene exposure → Leukemia

Benzidine → Bladder - Ca (TCC)

Nickel } Nasal Sinus Ca. (+) Lung Ca

Cromium } Lung - Ca ← Beryllium, Cadmium, Silica

Radon → Lung - Ca

Vinyl chloride → Liver - Ca

Notifiable & Compensatable ds since → 1924

* Lead Poisoning :- m/c Source = Petrol
m/c Route = Inhalatⁿ

which gp = Painter's → k/a = Painter's Colic

① Burtonian line = PbS

② Wrist/foot drop = Radial/Peroneal N. Palsy

③ Colic

1st Sign → Falter → most consistent sign in India

④ Encephalopathy

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Test → Coproporphyrin in Urine → Screening
Aminolevulinic Acid in Urine → Diagnosis
 Pb in Urine
 Pb in Blood
 P/s Basophilic RBC → Prognosis

DOC → EDTA > Penicillamine

ERGONOMICS

Preplacement examination
 → Primary Prevention

(Also School children)
 Periodic examination
 2° prevention
 once / 6 m - 1 yr
 once / 2 m = Radioactive exposure

* Caisson's disease

- Sea divers -

→ Sudden exposure to low pressure
 (deep → Surface)

once / month = Radium,
 Pb, Dye, Workless

once / day = Dichromates
 (hexavalent chromium)

Air expansion

Barotitis
 Barodontalgia
 Barosinusitis
 Emphysema

N₂ Gas

BENDS
 CHOKES
 Psickles
 Paralysis

Tx =

① Recompression
 OR
 2nd - Hyperbaric O₂
 chambers

most dangerous

* FACTORY (1948) ≥ 10 people working together

* Legal cut-off Age of employment > 14 yrs.
Per Capita Space 500 cubic feet

* ESI Act (1948) (Employee State Insurance)
Not Cover

Beneficiary

① Income < 15000

② Cover all Public - Private

Defence Imp

Mines

Railways

Educational

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DATE

→ temporary disability → 85% of daily wage upto Recovery

① Sickness Benefit = 50% salary x 91 days

② extended sickness = 50% " x 2 years

③ Enhanced " = 100% " x 7 d
x 14 d

④ Maternity Benefit = full confinement (6m)
100% wages x 24 wk

Abstrn - " x 12 wk (3m)

Any other ds. " x 6 wk.

→ Dependence benefit → Pension @ 70% of Wages

Contributn — Employer = 4.75% of Wages

Employee = 1.75% " Wages

→ Funeral expenses → Not more than 5000/-

Health Planning

objective → Specific pre-planned activity in H. Prog.

Target → degree of achievement of objectives
by 1995, 2000 etc. (time limit)

Goal → Ultimate desire state of H. program

eliminatn of Polio — 100% OPV coverage
[8 sainds] of Ruba Polio / y8.

TB program — 85% Cure Rate
70% Case detectn

* which show all / None phenomenon → Goal
(HEA) Health for all

www.FirstRanker.com		MDGs
NPP 2000 (National Pop. Policy)	NPH 2002 (National Health Policy)	
47 IMR < 30 (1990)	eliminat ⁿ of leprosy ✓	achieved
MMR < 100 (2012)	Exadical ⁿ of Yaws	by
✓ TFR < 2.1	" " Polio	2015
Mid term objective	(2005)	Millennium
100% Reg. of Birth, Death, Marriage	Zero level of HIV Growth	Development Goal.
	(2007)	
80% Institutional del.	Eliminat ⁿ of Kala Azar	
	(2010)	
100% by trained	Eliminat ⁿ of lymphatic filariasis	
* Preferable Age of marriage of Girls ≥ 20 yrs.	(2015)	
Populat ⁿ stabilize		
↓ in 2045		
long term objective.		

COMMITTEE

BHORE C. (1946) ① H. Survey & dev. Committee

② PHC (1 PHC / 40,000)

③ Social Physician (3 m / 12 month Internship in PSM)

④ Comprehensive H. Care

⑤ 3 Million plan.

MUDALIAR C.

(1962) Healthy Survey &

1. All India H. Service - ?

Planning

2. 1 PHC / 40,000

Chadha C. (1963)

Basic Health workers

classmate

1 / 10,000

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PAGE

Mukherji C. (1965) - B. Health Services
- dealing Malaysia & F. Planning

JUNGALWALA C. (1967)

- C. on Integratⁿ of Health Services

- ① Ban on private practice by Govt. doc.
- ② Equal pay for equal work.

MPW introduced by Kastur Singh C. (1973)

Srivastava C. (1975)

Group on Med. educatⁿ & Support Manpower

- 1 Reorientatⁿ of Medical educatⁿ (ROME)
- 2 VHG - 6th Pass
- 3 3-tiers Rural Health Infrastructure
 - Panchayat (Village)
 - P. samiti (Block)
 - Zilla Parishad (District)
- 4 Bands of Semi- para prof. H. workers.

Health Management

1. Cost Benefit Analysis → output of H. prog. in
MONETARY terms.
(financial)

2. Cost effective Analysis → output of H. prog in
terms of Results Achieved.
↓
No. of life Saved by TB Program.
No. of MI attacks prevented by Aspirin.
No. of Measles inf. Reduced

Best Indicator of CEA → QALY (Quality Adjusted-)

3. Systems Analysis → Comparison of cost effective
alternative in a H. program.

Sputum
classmate Smear
95%

vs

PCR
100%

PAGE ☐ ☐ ☐

Network Analysis

① PERT (prog. evaluatⁿ & Review Tech.)

→ Seq. of Activities in a H. prog.

② CPM (Critical Path Method)

→ Longest path of Network analysis

Cost Accounting :- Cost / Resource allocatⁿ in Health Program.

10 lac $\left\{ \begin{array}{l} 2 \text{ lac} - \Delta \\ 2 \text{ lac} - \text{Screening} \\ 6 \text{ lac} - \text{t/t} \end{array} \right.$

SWOT analysis

S - Strength

W - Weakness

O - opportunity

T - Threats

Health Communicatⁿ

1. Focus Group Discussion (FGD)

- discussion among 6-12 mem. including 1 gp. leader & 1 Repotais.

Some antenatal ♀ telling abt prob.

2. Panel discussion = Diff. = 4-8 experts in front of Audience

→ No Specific orders

→ No Set Speeches

3. Symposium - "Series of Lectures"

by experts, in front of Audients

→ No discussion among experts but two way Communicatⁿ

Specific orders Speeches.

classmate

76 / 125

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Work shop = Series of ≥ 4 meetings
 Used to "IMPACT Training"

Role play / Socio drama / Street Play :
 Ideally Audience Size < 25 (Small)

Seminars / Conference $\rightarrow$ Symposium at
 Big / Macro level

IPC (Interpersonal Communicatⁿ) - Face/face ^{1 to 1}
 e.g. OPD

Most effective = IPC ^o > FGD

H. Communicatⁿ

<u>DIDACTIC</u>	<u>SOCRATIC</u>
one way Communicat ⁿ	two way Communicat ⁿ
Lecture	FGD
Role play	Panel discussion
TV	Symposium
Radio	Seminars
Newspapers	IPC
	Work shop
	SPIKES
	Gather's

SPIKES technique = Communicatⁿ of Cancer Prognosis

S - Setting up interview
 P - Perceptⁿ
 I - Invitatⁿ to explain
 K - Knowledge
 E - Emotion
 S - Summary & Strategy

Best for BREAST - Ca

Gather approach $\rightarrow$ counselling of Contraceptive

Greet

Ask

Tell

Help

classmate

/S/E = P/I etc.

Return

www.FirstRanker.com

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Int. Health

International Health Regulation (1969)

- | | | |
|----------------------|-------------|-----------------------|
| ① cholera | ④ SARS | } added
in
2005 |
| ② Plague | ⑤ Polio | |
| ③ Yellow fever | ⑥ Small Pox | |
| Notifiable diseases. | ⑦ Influenza | |

H.Q. WHO — Geneva Switzerland
Unicef — New York

Epidemiology — study of Health of
International travellers.

World Health day — 07 April
W. AIDS — 1 dec → Ayan's B.D.
Anti TB — 24 March — Himesh Uncle B.D.
No Tobacco — 31 May

Quarantine
for Healthy contact

till Max IP
(e.g. YF = 6 days)

1° preventⁿ

Isolatⁿ
for Cases

till Recovers

2° preventⁿ

* UNICEF in India = G O B I - F F F
 Growth Monitoring OKS B-feed. female educatⁿ Immunizatⁿ food & Supp.

* Mental Health =
 → m/c Mental Health dis. → India → DEPRESSION
 in India → Unipolar Depression
 Alcohol disorders.
 Schizophrenia
 Bipolar disorder

classmate

m/c/c of death among M.H. disorder

— Alzheimer's dementia (Silent Epidemic)

m/c Abused substance in India → Tobacco

* Genetic

ABO based on 2^a Genes

A → 22%

B → 33%

AB → 5%

O → 40%

* Rh Based on 3 genes.

C D E — in Both.

$\swarrow$ $\searrow$
D d
Rh+ Rh-

* for expression of ABO — Body Req. "h" — antigen
but when Absent ⇒ Bombay Blood Gp.
they can't receive Blood.

$(a+b)^2 = a^2 + b^2 + 2ab$ — Hardy Weinberg's law

fseq. of Gene remain constant from
one Generatⁿ to another.

→ exceptⁿ = in Mutatⁿ

Total Genes in H. Genome = 22000 — 23000

Amniocentesis Indicatⁿ in India.

Age > 35 yrs.

Previous H/o Genetic / chromosomal / Metastatic
Fetal sex determinatⁿ anomalies

* Social Sciences

→ Culture → Learned behaviour Socially Acquired
Acculturation → Mixing of Culture / Contact Culture

1. Massage

2. Educatⁿ

3. Trade

4. Involvⁿ

* Internalizatⁿ ⇒ Adoptⁿ of
values of others and

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New family → Marriage ~~also~~ ^{also}

Modified KUPPUSWAMI Scale

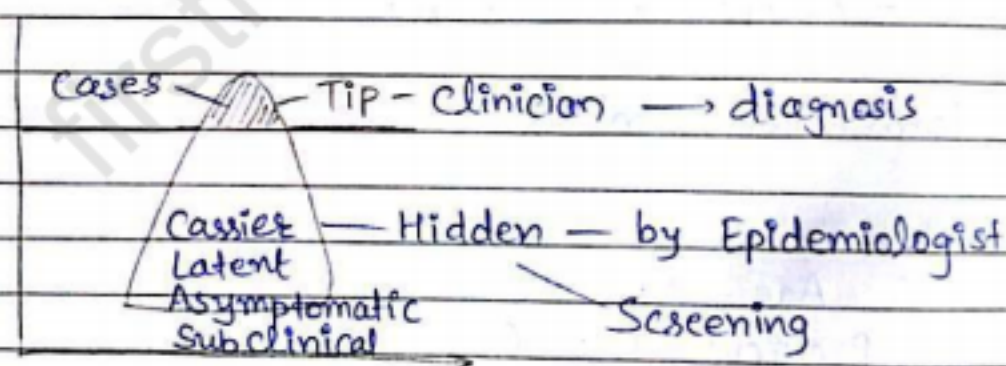
Educatⁿ occupatⁿ Income
 Head of family

HERD Immunity Not Seen in
 Tetanus } Need to immunize all
 Rabies } populatⁿ

Carriers & NOT Seen in / Not show
 Measles Tetanus Iceberg.
 Rubella Pertussis
 Rabies C. Pox

Imp 60 kg Male is Running at 12 km/hr

8 km/hr → 8 k.cal/kg/hr
10 km/hr → 10 k.cal/kg/hr



Best for Iceberg → PEM^o

Cafeteria Approach = Contraceptive Counselling
 → RCH program

2^o
 (Secondary Attack Rate) = $\frac{\text{No. of exposed persons developing disease within IP (5 \text{ y+})}}{\text{Total No. of exposed persons}} \times 100$
 classmate 50%

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- * Vaccine C/I < 1 yr Age → YF, Meningococcal, Pneumococcal, Typhoid.
- * Vaccine C/I > 2 yr. → Pertussis.
- * only Absolute C/I to killed v. → Severe local / general reactⁿ to a previous dose.

Diseases Under WHO Surveillance:-

List of Quasanthinable diseases :-

- | | |
|----------------------------------|----------------------------|
| ✓ 1) Louse Borne Typhus fever | 1) Diphtheria |
| ✓ 2) Relapsing fever | 2) Plague |
| ✓ 3) Polio | 3) YF |
| ✓ 4) Malaria ✓ = Notifiable Also | 4) Small Pox |
| ✓ 5) Human Influenza | 5) Infectious TB |
| 6) Rabies | 6) Viral Hemorrhagic fever |
| 7) Salmonellosis. | 7) SARS. |

* Civil Registratⁿ System

Birth / Death → 21 - 30 days → late fee
 30d → 1 yr → ⊕ district Registrar permission
 1 yr later → Late fee ⊕ order of executive Magistrate

Registratⁿ of Births & deaths in India
 55% 46%

Registratⁿ of Name of child → upto 1 yr → free
 ↳ after 1 yr → 5 Rs. charge. (upto 15 yr)

- Mega city > 10 million India's Megacity
- Million Plus City > 1 million Delhi, Bombay,
- Metro city → 0.1 - 1 million Kolkata, In 2015
- Town < 0.1 Million (1 lac) (Hyderabad)

- Estimating Burden of Pesticular disease in Community measured by → Proportional Mortality^r and DALYs

- * Standardizatⁿ → to compare diff. Populatⁿ to

classmate

remove confounding effect

of www.FirstRanker.com

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Direct Standardization $\rightarrow$ Actual Age Specific death Rate (ASDR) to Standard Gp.
 Indirect $\rightarrow$ Std ASDR $\rightarrow$ Actual age gp

* Standardized Mortality Rate

$$= \frac{\text{observed death}}{\text{expected death}} \times 100$$
 Proportion

* Adequate Water Supply for domestic Purposes
 Urban 150-200 L. Rural 40 L / Per capita per day.

$\rightarrow$ Drinking Water Req. $\rightarrow$ 2-3 L.

* Density of population = 382 $\rightarrow$ Highest = 11,297 (Delhi)
 $\rightarrow$ lowest = 17 (Arunachal P.)

* India $\rightarrow$ 640 districts & 6.4 lac Villages.

* Dependency Ratio (DR)

DR = Proportion <15 & >65 Population
 Proportion of 15-64 Age gp.

DR India	2004	64	56	8
2010	54	45	9	

means 54 Non earning people depend on 100 earning people.

* Literacy Rate $\rightarrow$ India = 74% (σ -82%, η -65%)

* Human Ig (Normal)

Ab Rich fraction from pool of >1000 donors

** >90% IgG, less IgA

e.g. Hep-A, Mumps, Measles, Rabies, Tetanus

20IU/kg

250 μ g
Prophylaxis

3000-6000
classmate Units (classmate)

0.25ml/kg

Human Specific Ig

Plasma of recovered Patients or Immunized
 5 times Ab potential

Hep-B, Varicella, Diphtheria

0.05 ml/kg

15-25 U/kg

Ans I Post exposure Prophylaxis (PEP) in Rabies:-

Licks / Scratches $\bar{c}$ out blood, $\rightarrow$ None (if History of Suspected animal or Handling raw flesh of Consumptⁿ of unboiled Milk Reliable)

Lick on fresh cut, scratches $\rightarrow$ Start vaccine $\bar{c}$ blood, All bites (except head, Neck, face, Palm, fingers) Immediately Minor wounds < 5

All bites { Multiple $\Rightarrow$ Start Rabies Ig and Lacerated wound Wounds > 5 Vaccine immediately Bites from WILD Animals.

Ans II Iodine Indicators :-

1) Salt Iodizatⁿ Process.

Iodine @ Productⁿ site, @ Packaging, @ wholesale & Retail levels @ Household.

2) Iodine deficiency status & Impact of Salt Iodizatⁿ:
- Urinary Iodine levels (of Pregnant) - Principle Impact Indicator
- Goiter assessment

- Neonatal thyroid Stimulating Hormone (TSH) level

3) to Assess Achievements :

- Median Urinary Iodine levels in Target Populatⁿ
- Availability of Iodized Salt @ Household level.

Age Group. (% of Populat ⁿ)	} * Child Woman Ratio = no. of 0-4 yr aged children / 1000 woman in Reproductive Age.
0-4 yrs children $\rightarrow$ 10%	
5-14 yrs. $\rightarrow$ 23%	
15-49 yrs. (Reproductive) $\rightarrow$ 53%	
50-59 yrs. $\rightarrow$ 7%	
≥ 60 yrs (Geriatric) $\rightarrow$ 7%	

* Senility = loss of Cognitive (memory) functⁿ Related $\bar{c}$ old Age.

SAR (Secondary attack Rate)

$$= \frac{\text{No of 2}^{\circ} \text{ Cases in 1 IP}}{\text{Total Susceptibles}} \times 100$$

→ In class of 100 (all < 5 yrs Age)

33 got Measles in 2009

33 got vaccine in 2010

Now 1st Case developed in 2011 - 1st March

11 " " in 2011 - 11th March

$$SAR = \frac{11}{33} = 33.3\% \rightarrow \text{measure of Communicability / Infectivity}$$

Measles → 80%

Mumps → >86%

Small Pox → 33-40%

C. Pox

Pertussis

Rubella

} >90%

* Period of Communicability :-

Measles = 4 days → Rash → 5 days

C. Pox = 2 days ← Rash → 5 days

Tetanus → No Period of Communicability Man^x - Man
but communicable Soil → Man

H₁N₁ → 1d ← Sx → 7 day

Diphtheria → 14-28 days from onset

Pertussis

Mumps

Rubella

HIV → life long

} → 1 wk ← Sx → 1 wk

WHO Control strategy :-

S - Surgery

A - Antibiotics

F - face Wash

E - Environment

for TRACHOMA

Doc → Azithromycin

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classmate

→ all children immunized on same day.
 → Age Gr = 0-5 yrs. (done in every January)
 Intensified → House to House survey after
 immunization day.
 in Pulse Polio → 3 Rounds/yr → could intensify

★ Catch up - Keep up - follow up → for Measles.
 all children on same day
 Routine immunization done every 2-4 yrs.
 coverage > 95%

Immunity Status Test

1) MONTAUX test → to detect Prevalence of TB
 Ag Used → PPD / Tuberculin (TU)
 Dose → 1 TU in 0.1 ml (Single strength)
 Reading after 72 hrs. (3d)

(+) → Indusatⁿ > 9 mm → Tells abt Infect.
 (-) → " < 6 mm → Never Infected.
 Equivocal → " 6-9 → doubtful

Current
 ↓
 Past

Repeat after 3m.

(FP) false +ve

(FN) false -ve

BCG vaccine

HIV

Atypical Mycobac.

MEASLES

faulty technique

C. Pox

degraded Tuberculin

Pertussis

Repeated testing

Corticosteroid

too deep infectⁿ

♀ / Malnutrition

Using A/Allergic tx.

High Grade fever

2) Lepidomin Test

Used for

1) Immunity status.

2) Confirmatⁿ of classificatⁿ

3) Prognosis

Δ → clinical examinatⁿ.

classmate

Ag

Used

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DATE Reading at
48 hrs.

21 days?

early Fernandez Reactⁿ
(Similar to Mantoux)Late Mitsuda Reactⁿ

→ Type-4 - HSR

Shick Test → Diphtheria

Ag Used → Shick toxin

Reading @ → 4 days (96 hrs)

(+) → Pt. Susceptible → Vaccine ✓

(-) → " Immune → X

pseudo → HSR but immune → X
(Red flush disappears in 4 days)

Combined → HSR but Susceptible

DesensitizatⁿTotal dose broken into Small dose ^{day} 1, 3, 5, 7, 11--

Montenegro test

for Kala - Azar.

Ag Used → Leishmanin (Promastigot form)

Reading @ 48-72 hrs.

Pathognomic c/p

Rabies → Hydrophobia ← m/c = 6g %

Measles → Koplik Spot → disappears Rash 1-2 days.

* 1st m/c Site → on buccal mucosa opp. to
upper 2nd Molar* 2nd m/c on external genitalia.

Diphtheria → Bull neck appearance.

Rubella → Forchheimer Spot

Pathognomic Microscopic feature

Rabies → Negri bodies

Measles → Warthin Finkeldy cells.

Specimen for Δ

- 1) Rabies (in living Person)
 - Best $\rightarrow$ Biopsy of skin follicles on Nape of Neck
 - Good $\rightarrow$ Corneal Smear
 - Spinal fluid / Serum / Saliva $\rightarrow$ less Useful
- * Rabies (dead) $\rightarrow$ Hippocampus Biopsy
- * Rabies in living / dead dog $\rightarrow$ Brain Biopsy
- 2) Swine flu $\rightarrow$ Nasopharyngeal Secretⁿ
 - Nasal secret $\rightarrow$ children
 - Pharyngeal $\rightarrow$ Adults
- 3) Influenza
- 4) Pertussis } Nasopharyngeal Secretⁿ
- 5) Diphtheria }
- 6) C. Pox $\rightarrow$ Vesicle fluid
- 7) HIV $\rightarrow$ Blood
- 8) TB $\rightarrow$ Sputum
- 9) Malasia $\rightarrow$ Blood
- 10) Leprosy $\rightarrow$ None

Small Pox :- by Variola Major.

"Vaccinia" used for Vaccine productⁿ

Variola minor cause Alastrim (S. Pox low)

Last case $\rightarrow$ Somalia (1977)

Eradicated 8th May 1980 (Red Cross day)

Last indigenous case in India $\rightarrow$ 17th May 1975

known case $\rightarrow$ 24th May 1975

IP $\rightarrow$ 14 days and SAR = 30-40%

Life long immunity.

S. Pox	C. Pox
Centrifugal	Centripetal
opposite	Deep drop on Rose Petal app.
classmate	Pleomorphic
	Superficial
	Unilocular
	flexor Aspect
	Rapid evolution

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m/c Complicat^{ns}

Measles → otitis Media

MUMPS → Aseptic Meningitis (in child 5-9)

Adolescent = ♂ → orchitis

♀ → oophoritis

Adult → Meningoencephalitis.

C. Pox

Pertussis

Influenza

Swine flu

Pneumonia.

Least Common

Complicatⁿ of Measles

is SSPE

(DAWSON'S ds.)

7/Million Case

→ after 7-10 Ys of Inf.

Measles :-

SAR - >80%

varicella

Strains → EZ, Schwarz, Mosaten.

* c/p → Rash Retroauricular origin

3°C

Cough

Coryza

Conjunctivitis

Fever.

Measles Vaccine Included in UTP to prevent Blindness

→ Eradic^{tn} Req. Vaccine Coverage >96%

→ Epidemic occurs if susceptible children >40%

→ Measles in Virgin/ New Community affects >90%

* Rubella = Congenital Rubella → 1st Trimester.
(m/c time)
Togavirus.

CONGENITAL Varicella (C.Pox) → 1st trimester

" Syphilis → 3rd

" Toxoplasma → 3rd

" CMV → 3rd

" Hep-B → 3rd

" HIV → delivery/ Breast feeding

" Herpes → delivery.

1st Trimester

→ Vaccine may NOT be given to "BOYS" m/c.

Abortⁿ, still Birth, and Classical Triad.

classmate Blue-Bessy
Muffin Baby.

- Cataract
- PDA
- deafness

PAGE
m/c

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Early 2nd trimester $\rightarrow$ only deafness

Late 2nd & 3rd Trimester } → No abnormality

- * Rubella 100% Preventable by Vaccine

* Most Priority gp. for Rubella Vaccinatⁿ

	Age	Sex	Priority
Susceptible	1) 15-49 yrs	♀	↓
	2) 1-14 ya	children	↓
	3) 0-1 ya	Infant	- Routine Immunization

* Meningococcal Meningitis (N. Meningitidis)

IP = 3-4 cl. and CFR = 80%

Shrains →

Type. A $\rightarrow$ m/c/c of Epidemic

No Vaccine

∴ No Immunogenic

- * Vaccines → killed → C/T in ♂

* DOC - Penicillins

→ **CARRIERS** / chemoprophylaxis → Rifampicin
m/c Source of Infectⁿ

★ Tuberculosis

NTP (National TB Programme) → 1762

✓ DOTS

RNTCP (Revised NT Control P.)

→ D₁ Directly observed

→ OJ drug consumption

T → Treatment

*S → short course of chemotherapy.

drug consumption

RNTCP

NLEP

(Nations)

Leptosy

elimination

AGE [୧୫.୫]

Cuse Rate 200%

Case detectⁿ > 70%

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screening → Cough > 2 wk (Hisen)

Δ - Sputum Smears by ZN stain for AFB
(2 Sputum in 2 days)

0/2 → Antibiotic → improve → HOME
for 2wk. → No improve → CXR → -ve

3+/2 } +ve Sputum
2+/2 } Smears TB

+ve
ss -ve TB.

TB
ZN stain
20% H₂SO₄
Single Rod app.
Beaded app.

Leprosy
M. ZN (MODIFIED)
5% H₂SO₄
"Globi"

DOTS strategy → total 3 category → freq. of drugs in India 3/wk.

I → ss +ve, & ss -ve TB

II → Relapsed, failure, defaultive

III → deleted and Merged I

IV → Multi drug Resistant T.B. (MDR-TB)
DOTS-PLUS

5 Primary line drugs in India.

ATT essential
H → most effective / most Bactericidal / Most Toxic
R → Causing Rapid Seroconversion, Orange Urine,
C/I in AIDS Pt & Protease I. (Not in HIV)
Z
E → only Bacteriostatic → Give Rifabutin/Rifampicin
S → Injectable ATT; C/I in Pregnancy.

drug C/I in HIV → Thiacezazone (Exfoliative dermatitis)
H → first to develop Resistance.

classmate E → Optic Neuritis (E for eye) → Red Green
C/I < 6 yrs Age. → Colour Blindness.

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Imp → ♀ on OCP Δ TB → Rifampicin Given
but OCP substituted by Bassles Method

* Mother's open case of TB.

↓ B. feeding Mandates
INH (H') Prophylaxis to Newborn
(5 mg/kg for 6 months)

* Mother → SS → ATT start

	IP (Intensive Phase)	CP	Total
Cat-I	2 months (HRZE) ₃ 3 times in week	4 (HR) ₃	6 month
Cat-II	2 (HRZE) ₃ ④ 1 (HRE) ₃	5 (HRE) ₃	8 month
Cat-IV	6 (KOCZEET) nothing means daily given	18 (OCEET)	24 month

K - kanamycin

Et = Ethionamide

O - ofloxacin

E = Ethambutol

C = Cycloserine

Z = Pyrazinamide

S = Streptomycin

H = Isoniazide

	Follow up Sputum Smear =	H	dose	% wks
Cat-I	→ 2 m → 4 m → 6 m	R	10	10
II	→ 3 m → 5 m → 8 m	Z	25	35
IV	→ IP CP	E	15	30
	1/month 1/3 month	S	15	15
	(6 month, 6 month) → Total = 12			

* New Case → Never taken Tx / took Tx < 4 wks

* Cured → SS -ve twice including @ end of Tx

* Relapsed → SS +ve after Cure → Cat-II

* Failure → SS +ve @ / after 5 m^s of Tx

* Defaulters → Missed drugs ≥ 2 months Continuously

MDR-TB = Resistant to 'H' and 'R' @ Same time
Plain Resistance = 'H' OR 'R' @ time.

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XDR-TB (Xtreme drug Resistance)

Resistance to 1st line drug (H+R Both) ⊕
 " " 1 fluoroquinolone (2nd line) ⊕
 1 more 2nd line drug out of 3 injectibles

(Kanamycin) (Amikacin) (Ciproflox.)

Tx = PZA ⊕ ⇒ 1st line

TDR-TB (Total drug Resistant) → R. to all drugs.

- Anti TB day → 24th March (Bhanesh Bday)
- National TB institute → Bangalore (NTI)
- SS +ve on ZN : Min Bacillary load $> 10^4$ /ml Sputum.
- Culture media in India = LJ media.
- Sputum disposal method → Incineratⁿ / Burning (Best)
 other - Boiling/Autoclaving/ 5% Cresol.

TB Bacilli Survival → Sputum = 1 day
 ↳ Droplet = 10⁶ days.

★ Leprosy ★ (Social disease / oldest disease of Mankind)

easiest Sensatⁿ lost is Temperature.

m/c Nerve affected 1) Ulnar (CORD Thickened)
 2) Post Auricular
 3) Laternal tibial

→ Ridley Jopling classificatⁿ of Leprosy.

Tuberculoid TT m/c in India

(BT) ~~BT → Tuberculoid → Borderline → Lepromatous~~

Borderline BB

B. Lepromatous BL

Lepromatous LL
 Leprosy.

other → Madrid classificatⁿ

⊕ Indian (Dharmendra classificatⁿ)

↓
 Pure Necrotic type
 (only seen in India)

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→ Leprosy tx is r/a = multi drug therapy

	MDT	
	<u>Pauci Bacillary</u>	<u>Multi bacillary</u>
Skin lesions	$\leq 5 + 1$ Nerve	$> 5 + \geq 1$ Nerve
RJ classification	TT, BT	BB, BL, LL
Bacteriological Index	< 2	≥ 2
No. of Drugs	2 Dapsone Rifampicin <i>most powerful drug against Leprosy.</i>	3 Dapsone Rifampicin Clofazimine → also used in Type-2 lepra React
Duration of Tx	6 months	12 months.
Follow up	2 years	5 years.

* Defaults → missed medicine > 12 months.
(in TB → > 2 months)

Immunity (Leprosy)

Cell mediated	Humoral
1) Leprosin Test	1) ELISA
2) Lymphocyte Transformant Test (LTT)	2) Radio-immuno Assay
3) Leukocyte Migration Inhibitory Test (LMIT)	3) Monoclonal Ab. Test
	4) FLA-ABS (fluorescent Lepromatous Ag)

MAALARIA :-

Causative Agent → Plasmodium

- Vivax (8-17d)
- ovale (16-18d)
- Malaria (18-40d)
- falciparum (9-14d)

only causes Complications ← Cause of Death ← m/c ← falciparum

Avg = 12

Imp → No Relapse → P. falciparum } No Exo-erythrocytic phase.
P. Malaria }

classmate

Bite ↓
Infective form → Anopheles Stephens → Urban Malasia
→ Anopheles Culicifacies → Rural Malasia

Infective form $\rightarrow$ Anophelis Culicifacies $\rightarrow$ Rural Malasia

Spasozoites $\rightarrow$ but "In Inject" of Blood of Malaria Patient $\Rightarrow$ TROPHOZOITES.

(Congenital / Transfusion / Drug Addict)

4A Treatment Guidelines :-

Doc for Malaria $\rightarrow$ chloroquine + Primaquine
 (CQ) (PQ)

P. vivax $\rightarrow$ CQ - 3 day
PQ - 14 day

P. falciparum → CG - 8 day
(pf) PG - 1 day

GI in Hemolytic diseases (G6PD def.)

line
⑩ $\text{CO}_2 \rightarrow 10 \text{ mg/kg}$

② → ACT (Astemisinin Combination Therapy)

Artesunate Sulfaline Pyrimethamine.

③ → Quinidine

⇒ Doc for ^(viva) Malasia ♀ →  → Doc for Severe Malasia
 " " Severe Malasia " ⇒ Quinine. for any Age G.

Chloroquine $\rightarrow$ Ist Trimester $\rightarrow$ Quinine
IInd " } Parenteral Artemisinin
IIIrd " } derivative.

Doc $\rightarrow$ chemoprophylaxis
 < 6 wk $\rightarrow$ Doxycycline
 > 6 wk $\rightarrow$ Mefloquine

Stain $\leftarrow$ classmate SMEAR $\rightarrow$ Thick $\rightarrow$ Sensitivity $\rightarrow$ Presence of Malasia
JSR $\rightarrow$ Thin $\rightarrow$ Specificity $\rightarrow$ Species Identification

NVBDP (National Vector Borne Disease Control Programme)

- 1) Malaria 4) JE
2) Dengue 5) Chicken Guniya fever (CGF)
3) Filariasis 6) Kala Azar → Vector bly.

★★ Best Indicators in India :-

- 1) TB Control $\rightarrow$ ARI (Annual Risk of Infection)
- 2) Malasia Control $\rightarrow$ API (Annual Parasitic Incidence)

$$API = \frac{\text{Cases}}{\text{Total Populat}^n} \times 1000$$
- 3) Occupational efficiency in Malasia Control
 ABER (Annual Blood examination Rate)

$$= \frac{\text{slides}}{\text{Total Pop.}} \times 100. \Rightarrow \text{Ratio}$$
- 4) RECENT Malasia transmission $\rightarrow$ IPR
 (Infant Parasite Rate)
- 5) Malasial endemicity $\rightarrow$ Spleen Rate
- 6) Control $\leftarrow$ Leprosy $\rightarrow$ Load

$$\begin{array}{ccc} \downarrow & & \downarrow \\ \text{Incidence} & & \text{Prevalence} \end{array}$$

M/c Human AILMENT → Acute Resp. Tract Inf. (Pneumonia)

No Pneumonia - fever^(only)
Coryza

Home

Pneumonia - Δ = RR elevatⁿ

RR ≥ 60 (0-2 m)

RR ≥ 50 (2-12 m)

RR ≥ 40 (1-5 yrs)

PHC

COTRIMOXAZOLE

Severe diseased Pneumonia

Δ = Chest Indrawing
Cyanosis
Grunting
Nasal flaring.

Refers to Higher
centre
CHC

PENICILLIN

Very Severe Pneumonia

- Stupor - Coma
- Convulsions - Lethargy
- PEM / Diarrhea
- High Grade fever.

"

CHLORAM-
PHENICOL.

HIV:- NACP → National Aids Control Programme
↳ Route of Transmission

Sexual → m/c Route (89% Cases)
↳ Least efficient² (0.01 - 0.1%)

Blood → Least Common Route (<1% Cases)
↳ m/efficient³ or dangerous Route (>90%)

Needle / Syringe → efficacy = 9% | Cases = 2%

MTCT → Mother to child Transmission

Q → Screening BT:

1) Malakia

3) Hep. C

2) Hep. B

4) HIV

5) Syphilis

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- MTCT-HIV $\rightarrow$ Rate in India $\sim 30\%$ (developed countries - 20%)
 $\rightarrow$ Rate in India through B. feeding = 15% ($12-16\%$)
 $\rightarrow$ Overall Risk of Transmission = 45%

Prevention of MTCT : efficacy.
 1) Nevirapine $> 50\%$ (preferred : single oral dose)
 2) Zidovudine $> 66\%$ (Best)
 3) Elective C. Sectⁿ $> 50\%$

- Post nevirapine prophylaxis, MTCT HIV in India will be = 15% ($> 50\%$ efficacy)
 $\rightarrow$ Nevirapine dose to Newborn is 2 mg/kg and given $\bar{c}$ in 72 hrs of delivery.
 $\rightarrow$ Nevirapine dose to mother is 200 mg & given @ onset of labour.

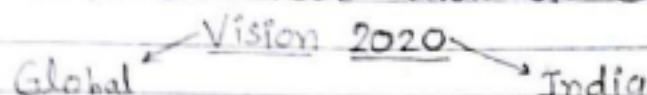
- Best Marker of Progression is CD4 : CD8
 Anti Retroviral started if CD-4 < 350
 m/c Opportunistic Inf. of HIV $\rightarrow$ PCP (Pneumonia)
 but m/c in India $\rightarrow$ TB
 1st Case USA $\rightarrow$ 1981
 " " India $\rightarrow$ 1986 $\rightarrow$ Now Total = 2.27 M (Chennai)
 ** HIV caused by HTLV-III virus

DATE [] [] [] [] [] [] [] []

* WHO Initiatives :-

Right to sight initiative → "Vision 2020"

Aim → to eliminate avoidable causes of Blindness.



- | | | |
|----------------------------------|----|-------------------------|
| 1) Cataract | 11 | } Same as Global |
| 2) Refractive error & low vision | 27 | |
| 3) childhood Blindness | 37 | |
| 4) Trachoma | 47 | |
| 5) Onchocerciasis | 57 | 5) Glaucoma |
| | | 6) Diabetic Retinopathy |
| | | 7) Corneal blindness |

Roll back initiative → Malasia

3 by 5 initiative → HIV

→ 3 Million HIV⁺ on Anti Retroviral by 2005

12 by 12 initiative → IDA (iron def. Anemia)

→ 12 gm % Hb of Girls aged 12 by 2012

* Blindness :-

WHO BLIND → $< 3/60$ visual Acuity

in better eye & best possible correctⁿ

* NPCB blind India → $< 6/60$

National Prog. of Control of Blindness

* m/c of Blindness → Cataract > Glaucoma

m/c of Low Vision ($< 6/18$)

→ m/c of ocular morbidity → Refractive errors.

→ m/c preventable cause of preventable Blindness

In Indian children → Vit. A def.

I Low Vision → $< 6/18 - 6/60$

II Economic Blindness → $< 6/60 - < 3/60$ ⇒ Work vision

III Social " → $< 3/60 - < 1/60$

Legal " → $< 6/60$ or $< 20^\circ$ field of vision

IV Manifest Blindness → $< 1/60 - PL (+)$

* Serial vision Screening Prog.

Classmate Teacher / 150 student

→ Referral to PHC if VAcuity $< 6/9$

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*** OBESITY :-**

Best Indicator is BMI (Adults)

$$BMI = \frac{W \text{ (kg)}}{H^2 \text{ (m}^2\text{)}}$$

Quetlet's Index

→ International classification of BMI

	Underwt.	(N)	Pre-obese	obesity
Percentile class	← 18.5	25	30	→
	← 5 th	85 th	95 th	→
	← 18.5	<u>23</u>	<u>25</u>	→

children → Ponderal Index = $\frac{W \text{ (m)}}{H^3 \text{ (kg)}}$

Broca's Index → $\frac{H}{cm} - 100$

Cosperence Index = $\frac{\text{Actual Wt.}}{\text{Desirable Wt.}}$

*** Grade OBESITY**

I → 30 - 34.99

II → 35 - 39.99

III → ≥ 40 (Morbid obesity)

Super IV → ≥ 50

*** Skin fold Thickness**

↓
measured by

Haspenden Calipers

Biceps
Triceps ← most Sensitive
Suprailiac
Subscapular

*** Waist - Hip Ratio → Measures CVS / CHD Risk**

$\begin{matrix} > 1 \text{ } \sigma \\ > 0.85 \text{ } \phi \end{matrix} \left. \vphantom{\begin{matrix} > 1 \\ > 0.85 \end{matrix}} \right\} \text{Obesity}$

90 cm Waist Circumference
80 cm "cut offs"

WHO Replaced ϵ → Waist - Height Ratio

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Best Indicator for CV Risk

Waist Ht. Ratio > 1/2 (CV Risk)

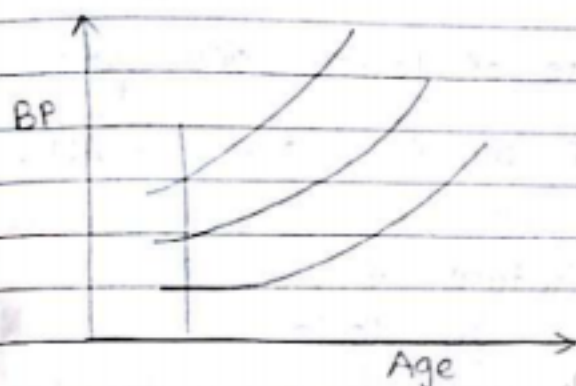
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* m/c non-communicable ds. in India → Leprosy.

Rule of Halves :

50% have HTN (of Total population) → 50% of them have Sx.

↓
50% out of them ← 50% of them diagnosed.
(only 6%) take Tx.



* Cancers :-

m/c Cancers.

WORLD

m/c

♂
Lung Ca.

♀
Breast Ca.

India = Oesopharyngeal

m/c of death

Lung Ca.

Breast Ca.

→ Cancer A/w = Smoked fish → Stomach Ca.
Alcohol (Beers) → Rectal Ca.
fibre protect against → Colonic Ca.

* SARS :- 2002 China

Caused by Corona Virus.

IP = 5-8 day.

→ Max viral excretion on 10th day.

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★ POLIO :-

$P_1 \rightarrow$ m/c/c of Epidemic

$P_2 \rightarrow$ Most Antigenic / most easy to eradicate

$P_3 \rightarrow$ m/c/c of VAPP

Types :-

★ Subclinical $\rightarrow$ 95% (m/c) || Non-Paralytic $\rightarrow$ 1%

Minor (Abortive) $\rightarrow$ 4-8% || Paralytic $\rightarrow$ <1%

$\rightarrow$ for 1 clinical case of Polio, 1000 Subclinical cases of children

$\rightarrow$ 75 subclinical cases in ADULTS.

* NPEP = National Polio eradication Programme :

$\Delta \rightarrow$ Stool Culture + Viral Isolation

$\rightarrow$ Type of Paralysis in Polio = Descending, Asymmetric, flaccid & Patchy Paralysis

* Pathognomonic H/o $\rightarrow$ Fever @ onset of Paralysis.

$\rightsquigarrow$ AFP Surveillance (Acute Flaccid Paralysis)

Active Surveillance $\rightarrow$ H. System goes to Community

Age Gp $\rightarrow$ Children 0-15 yrs.

stool $\rightarrow$ ① 2 Samples are taken 24-48 hrs apart ② each 8 gm wt [Adult Thumb Size]

- ③ Transported @ $+2^{\circ}\text{C} \rightarrow +8^{\circ}\text{C}$ (Refrigerated chain)

$\rightarrow$ Residual Paralysis is checked @ >60 days of onset of paralysis

OPV

SABIN

live

Local + Systemic

VAPP

IPV

SALK

killed

Systemic Immunity

No VAPP

Glucose is only added

Compositⁿ (Grams)

New
CRS

$$\text{NaCl} \rightarrow 2.6 \text{ gm}$$
$$\text{KCl} \rightarrow 1.5 \text{ gm}$$

Na-Citrate $\rightarrow$ 2.9 gm

Glucose $\rightarrow 13.5 \text{ g}$

Total $\rightarrow 20.5 \text{ gm}$

Osmolar Concentration

$$\text{Na}^+ \rightarrow 75 \text{ mmol/l}$$
$$K^+ \rightarrow 20$$
$$d \rightarrow 65$$

Citrate $\rightarrow 10$

Glucose $\rightarrow$ 75

245 mmol/l

→ 1 ORS packet is dissolved in 1 Litre of Water
Shelf life → 24 hrs.

Re So Mal → ORS only for Malnourished children.
 Rehydration Solution for

→ Best oral solutⁿ for diarrhea → ORS

→ " i/v " " → DTS → ^{Plausible} Tx Sigs

★ ★ Hepatitis :-

* Infectious Hep / Epidemic Jaundice $\rightarrow$ Hep. A

Transfusion Hep. / NANB Hep. → Hep. C

* Serum Hep. $\rightarrow$ HBV

Australia Ag $\rightarrow$ HBsAg

* Dane Particle $\rightarrow$ HBV DNA

Delta Agent $\rightarrow$ HDV

MTCT when HBsAg Present $\rightarrow$ 90%

HBsAg → 20%

Causier $\rightarrow$ Hep-B * Cancer / Chronic Hep $\rightarrow$ HCV

- * HBsAg → Epidemiological Marker

HBeAg → Marker of Infectivity / Active Viral Replication

Anti-HBc → Marker of Acute Hep. (IgM)

Anti-HBe $\rightarrow$ Marker of good prognosis

Anti - HBs $\xrightarrow{\text{classmate}}$ Masker of end of communicability

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--	--	--	--	--	--

WORMS :-**Round Worm** (*Ascaris Lumbricoides*)IP $\rightarrow$ 2 months. * Route $\rightarrow$ fecal-oralDoc = Albendazole $>$ Mebendazole

Single dose BD x 3 days.

Hook Worm :- (*Ancylostoma duodenale* / *N. Americanus*)Route $\rightarrow$ Penetratⁿ of skin of foot (STH) / oral Route

Soil transmitted Helminth.

A/w Iron def. Anemia because of Blood loss,
amount $\rightarrow$ 0.03 - 0.2 ml^s / worm / day.

To evaluate Hookworm Problem :

chandler's Index = $\frac{\text{No. of Hook Worm eggs}}{\text{Gram stool.}}$
(CI)* HW major problem if CI > 300 Doc $\rightarrow$ *A. duodenale* = Albendazole*N. Americanus* = Mebendazole200-250 $\rightarrow$ Potential damages250-300 $\rightarrow$ Minor Public Health Problem.**Gunia Worm** (*Draconculis Medinensis*)last Case in India $\rightarrow$ 1996^s (Jodhpur, Rajasthan)India eliminated $\rightarrow$ feb-2000^sIndia certified Guinac worm free $\rightarrow$ feb 2001.Route $\rightarrow$ Water Consumptⁿ (Cyclops)(≥ 2 mg/L Residual chlorine to kill Cyclops)Doc = Nitidazole^s

Chemical = Abate / Temephos (larvicidal)

1 st Host		2 nd Host
* definitive Host		* Intermediate Host
* <u>Sexual Cycle</u>		* Asexual Cycle
Malasia	Anopheles	Man
T. Salium	Man	Pigs
T. Saginata	Man	Cattle
Filariasis	Man	Culex
Echinococcus	Dog	Sheep / Human (Accidental)
Guinea Worm	Man	Cyclops.

★★ Biological Transmission :- (for Arthropod Borne ds.)

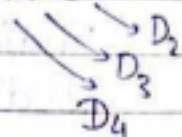
Propagative	Cyclopropagative	Cyclodevelopmental
→ only Multiplicat ⁿ occurs.	Multiplicat ⁿ + developmental	only development occurs.
- Plague	- Malaria	→ Guinea Worm
- YF		→ Filariasis

★★ ARBOVIRAL Disease :-

* Dengue :- Vector → Aedes Aegypti

Causative Agent → Dengue Virus → D₁

* Reservoirs → Man, Mosquito



Dengue	DHF	DSS
* Break Bone fever	* Masked Thrombocytol	DHF (+)
* Retro orbital Pain	* Tourniquet Test (+)	* Narrow Pulse
* Gum Bleeding	* Hematocrit ↑ 20%	Pressure < 20 mmHg
* Abdominal Pain	* Shock ±	* Cyanosis
	Dengue Hemorrhagic fever	* Cold Skin
		* Restlessness
		Dengue shock Syndrome

* Chickengunia fever (CGF)

Vector → A. aegypti

Reservoirs → Primates / Monkeys.

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★ **Yellow fever** :- (flavivirus *flaviscus*) → ^{Vector} Aedes
IP = 2-6 → Quasoline.

★ Reservoirs → Man, Aedes, Monkey.

★ Vaccine → 17-D (live) → Validity = 10 d → 10 yrs.
(WHO)

★ WILD Control Measures

1) 400 m Around Airport Aedes free

2) Aedes Aegypti Index < 1% (Bseteau Index)

★ **Plague** (Black death, Mahamasi, The great Death)

★ Bipolar staining & Wayson's stain

★ Reservoir → Rat (*Tatesa Indica* in India)

Source → Infected Rodent, fleas & Case of P. Plague

Vector → Rat flea (*Xenopsylla cheopsis*)

→ IP → 1-7 d → m/c type = BUBONIC (India)

Doc

Cases

chemoprophylaxis

Streptomycin

30 mg/kg i.m. x 7-10 day.

Tetracycline

500 mg qd x 5 day.

→ Recent Most outbreak plague → Shimla, 2002.

★ **Japanese Encephalitis** :- (J.E. Virus)

Vector → Culex *Tsitaeinoszynchus* (m/imp)

Mosquito Attractant → Buffalo/Cattle

Amplifier Host → Pigs

Actual Host → Asdied Birds (Ducks)

Accidental / Dead end Host → Man.

IP = 5-15 day

Man dead end Host for → JE & KFD

Tetanus

Rabies.

Echinococcus.

Vaccine

SA-14-14-2

Beijing-13

Nakayama / Beijing

live

killed

killed

cell culture
desived.

Mouse Brain Desived.

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KFD (by KFD Virus)
 IP = 5-15 days.
 Vector → Hard Tick (*Hemaphysalis spinigera*) India

Soft Ticks outside India →
 Ⓚ KFD → Ⓜ - fever Ⓜ Relapsing fever

Rickettsial Diseases

Disease	Cause	Vector	Reservoir
Epidemic Typhus	<i>R. Psowazeki</i>	Louse	Man
Endemic Typhus	<i>R. Typhi</i>	flea	P
Scrub Typhus	<i>R. Tsutsugamushi</i>	Mite	O
Indian Tick Typhus	<i>R. conasi</i>	Tick	P
Rocky M. S. fever	<i>R. Rickettsii</i>	Tick	E
Rickettsial Pox	<i>R. Akasi</i>	Mite	N
Q fever	<i>Coxiella Burnetii</i>	X	Cattle
Trench fever	<i>Bartonella</i>	house	Man

DOC = Tetracycline for all.

★ **Leishmaniasis**

	Visceral L.	Cutaneous L.	Mucocutaneous L.
Kala Azar	Oriental Soze		
Cause	<i>L. Donovani</i>	<i>L. Tropic</i>	<i>L. Braziliensis</i>
Vector	SANDFLY / Phlebotomus		
Culture	NNN Medium		

Δ = ELISA (Δ + epidemiologic field survey)
 sk-39 dipstick test (Revesse kit)
 IFAT (Indirect fluorescent Ab Test)

Surveillance Test → Aldehyde Test Napier.

DOC → 1st → Sodium Stibogluconate (Antimonial)
 2nd → Miltefosine
 others → Amp-B, Ketokonazole, Allopurinol, Sifomquine, Mepacina

Tseponematosis

Syphilis

T. Pallidum

Yaws

T. Pestunoe

Pinta

T. casateum

Venereal /
Sexual

Non-Venereal

Spread by direct Skin Contact

β - Benzyl Penicillin.

Syphilis

Gonorrhea

Doxycycline $\leftarrow$ LGV

Chancroid

Donovanosis

5 classical STD in India.

but m/c STD in India

Tsichomoniasis

Dec - Metsonidazole

Other STD $\rightarrow$

Gp-B streptococci

Candida

Mycoplasma

Scabies.

Ureaplasma

Gallymatobacterium

Molluscum Contagiosum

Filariasis :-

Microfilaria Not Seen in

a) Blood

c) Lymph

b) Urine

$\checkmark$ d) Lymph Nodes.

Lymphatic filariasis

Brugian filariasis

Cause

Wucheria Banksofti

Brugia Malai

Vector

Culex

Mansonia

Roc

DEC

DEC

Diethyl Carbomazine

6mg/kg x 12 days.

RABIES :-

Street Virus

Fixed Virus

IP = 20-60 day

2-6 days

Negsi Bodies $\oplus$

$\ominus$

classmate

Rabies by $\rightarrow$ Bullet shaped - Lassa Virus Type-1.

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DATE

* Mode of Transmission → Animal Bite
Licks
Aerosol (Bats)
Corneal / organ Transplant

Food Poisoning :-

m/c → Staph food poisoning → 1-6 hrs (Preformed Toxin)
Bacillus Cereus → emetic → 1-6 hrs
Non-emetic → 6-24 hrs.
Clostridium Perfringens → 6-24 hrs.
Botulism → 12-36 hrs.

National Mental Health Programme (NMHP)

- 1) Use mental Health technology in Hospital
- 2) Δ & Tx of mental Health disorders.
- 3) Principle of Mental Health in PHC.

IMNCI → Integrated Management of Neonatal childhood illness.

- Diarrhea
- Measles
- Malaria
- PEM
- Pneumonia.

→ NRHM (National Rural Health Mn) → 2005
MTP Act → 1971
Factory Act / ESI Act → 1948
OT Act (Organ Transplantation)
PNDT (Pre-natal sex determinatⁿ) Act } → 1994
RTI Act (Right to Informatⁿ) → 2005
IT Act (Informatⁿ Tech.) → 2000

DOC

DATE

Disease	DOC	disease	DOC
<u>M. Meningitis</u>		<u>Typhoid fever</u>	chloramphenicol
Cases	Penicillin		
Contacts	Rifampicin	<u>Ascariasis</u>	Albendazole
Causies	Rifampicin	<u>Ancylostomiasis</u>	Albendazole
<u>Diphtheria</u>		<u>Dysentery</u>	Nisidazole
Cases	Penicillin + ^{Anti} toxins	<u>Malasia</u>	
Causies	Erythromycin	Cases	chloroquine
<u>H₁N₁ / H₅N₁</u>		Severe/Complicated	Quinine
Cases	Oseltamivir	chemoprophylaxis	
Causies	"	<u>Lymphatic Filiasia</u>	DEC
chemoprophylaxis	"	<u>Plague</u>	
<u>CHOLERA</u>		Cases	Streptomycin
Adult	Doxycycline	chemoprophylaxis	Tetracycline
children	Cotrimoxazole	<u>Taeniasis</u>	Niclosamide /
♀	Fusazolidone		Praziquantel
chemoprophyl.	Tetracycline	<u>NCC</u>	Albendazole
<u>Trachoma</u>	Azithromycin	<u>Leishmaniasis</u>	Na ⁺ Stibo-
<u>Rickettsial ds.</u>	Tetracycline		Gluconate (SSG)
<u>HGV</u>	Doxycycline	<u>Treponomal ds.</u>	Benzathine-
			benzyl Pn.

* Tosniquet Test :

also known as "Capillary fragility test" or "Hess Test"
 Test (+) when >20 Petechial spots /sq. Inch in Cubital fossa
 Test (+) → Dengue / Chikungunya fever
 Use to Identify → Thrombocytopenia.

** Rheumatic fever Prevent

1° → Single dose i/m

2° → 3 weekly intervals for 5 yrs or till 18 yrs Age

children → BBP 6,00,000 U

Adult → BBP 12,00,000 U

* Best approach to control asthma → Environmental.

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