COMMUNITY MEDICINE REVISION 1

Health Care System-India

00:02:01

	NRHM	NUHM	ICDS	CPHC (Ayushman Bharat)
Full form	National rural health mission	National urban health mission	Integrated child development services	Comprehensive primary health care
Ministry	MOHFW	MOHFW	MOWCD	
Innovation in manpower	ASHA	USHA	AWW	CHO

National Health Mission (NHM) = NRHM + NUHM

NRHM :

Level	Population norms	Manpower
District hospital	For a district	Specialized doctors, specialized labs, blood banks
CHC	1/80,000 : HTF 1/1,20,000 : Plains	Specialized doctors, OT tech, Lab tech
PHC	1/20,000 : HTF 1/30,000 : Plains	Medical officer, HA, ANM, pharmacist, lab tech
Subcentre	1/3000 : HTF 1/5000 : Plains	MPW male MPW female
ASHA (Village)	1/1000 : Minimum 2/1000 : Desirable	ASHA

HA : Health Assistant.

HTF : Hilly, Tribal, Forest areas.

ANM : Auxillary Nurse & Midwife.

MPW : Multi Purpose Worker.

Community participation :

Rogi Kalyan samiti (RKS) :

- Aim : Better functioning of health centers.

Mahila Arogya Samiti (MAS) :

- 50-100 houses under the program.

----- Active space -----

- Aim : Help in MCH, growth and development monitoring of children.

NUHM :

00:10:45

Levels	Population norms
District hospital	For a district
U-CHC	1/2.5 lakh 1/5 lakh (metro cities)
U-PHC	1/50,000
ANM, MCH	1/10,000
USHA	1/1000-2500 (1/200-500 houses)

Type of subcenters & PHC :

	Type A	Type B
Subcentres	No delivery facilities	Delivery facilities present
PHC	<20 deliveries/month Low load PHC	>20 deliveries/month

First referal units (upgraded CHC) :

Can be any facility (CHC/PHC) with :

- 24 x 7 functioning blood banks + obstetrics + paediatrics department.

Bed facilities :

Level	Population	Bed
District hospital	District	Minimum : 100 (Recommended : 1/1000)
U-CHC	2.5-5 lakh (metro cities)	50-100
Rural CHC	HTF : 80,000 Plains : 1.2 lakh	30-50
Polyclinic	2.5-3 lakh	-
U-PHC	50,000	4-10
PHC	HTF : 20,000 Plain : 30,000	A : 4-6 B : 8-10
Subcentre	HTF : 30,000 Plain : 50,000	A : 0-1 B : 2-3
Village (ASHA)	1000	No beds

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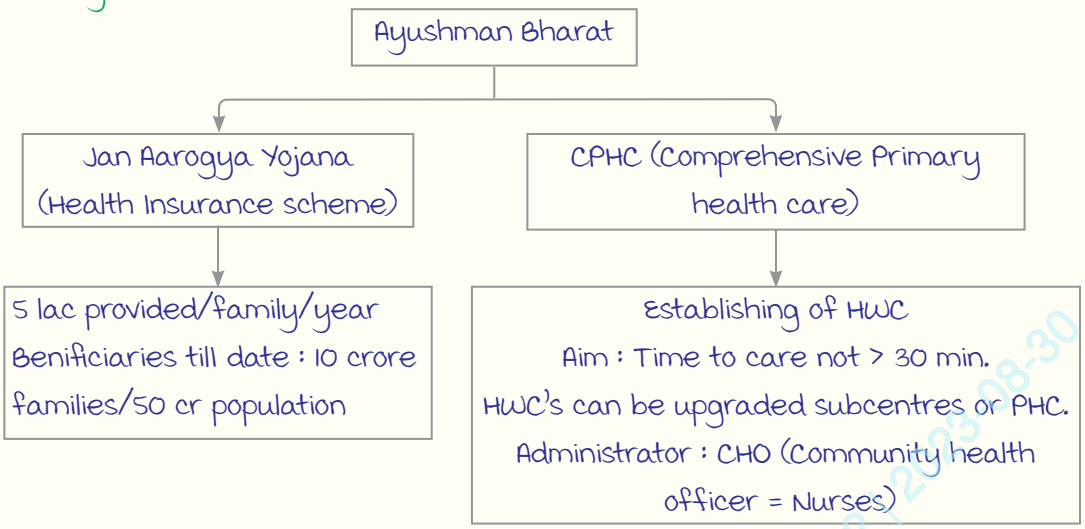
Health and wellness center (HWC) :

Under Ayushman Bharat.



Functions of ASHA (Accredited Social Health Activist) :

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- Home visits.
- Create awareness on health and social issues.
- Visits to the health facilities and facilitate access to health care services.
- Counsel women on RCH.
- Primary medical care to all.
- Maintain records of birth, death.
- Depot holder for ORS, antibiotics, IFA tablets, FP methods.
- Total sanitation campaign.
- Help out all other national health programmes.

Functions of MPW (Multi Purpose Worker)

00:24:01

MPW male	MPW female
1. Responsible for slides, spray, survey, Rx of vector borne diseases (ex : Malaria). 2. Water quality assessment. 3. Records & register maintenance. 4. Survey & OPD.	1. MCH : ANC, PNC, immunization, family planning. 2. Survey. 3. OPD.

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ICDS

00:25:43

Division	Population
CDPO (Child Development Project Officer)	1 lac or 1 block
Anganwadi supervisor	25,000
Anganwadi	400-800
mini anganwadi	150-300

Ministry : ministry of women & child development (MOWCD).

Administration level : Block level hospitals.

Functions :

- Supplementary nutrition.
- Non formal, adolescent health education.
- Health care.
- Mother & child care.
- Facilitating immunization.

ICDS

Beneficiaries of ICDS :

- Children up to 6 yrs (0-6 years).
- Pregnant and lactating females.
- Adolescent girls.

Supplementary nutrition in anganwadi :

	Calorie/day	Protein/day
6 m-6 yrs	500 Kcal	12-15 g
Pregnant female	600 Kcal	15-20 g
Malnourished child	800 Kcal	20-25 g

Village Health, Nutrition & Sanitation Day (VHND) :

00:31:07

- Important member : ASHA >> Anganwadi worker.
- Supervisors : MPW or ANM.
- Reporting of VHND to medical officer.

Anganwadi Worker (AWW) :

00:33:17

- Clean AWC, clean drinking water.
- Availability of facility for ANC, immunizations.
- Growth monitoring of children, pregnant females.
- Records of growth & development.

Active space

National Quality Assurance Program : NQAS

00:33:38

- Kayakalp awards : For better hospital administration & patient satisfaction.
- Swatch Swasth Sarvatra : Clean and safe drinking water in public hospitals.
- LaQshya scheme : For labour room → ensures quality of care during delivery & post partum (procedural & blood safety).
- MusQan : Child friendly public health care facilities.
- SaQushal : Safety and quality assessment for the health facilities.
- Mera Aspataal : IT platform to captures voice of patients to improve quality.

Suggested norms for health personnel

00:35:59

Nurses	1/5000 India norm 3/1000 WHO norms
Health worker	1/5000 : Plains 1/3000 : HTF
Trained dai	1/village
Health Assistant	1/30,000 : Plains 1/20,000 : HTF
Pharmacist	1/10,000
Lab technicians	1/10,000
ASHA	1/1000 : Minimum 2/1000 : Desirable
Doctors	1/1000 : WHO 1/1445 : India

eHEALTH

00:36:59

eHospital	Hospital records maintenance
e-sanjeevani	Telemedicine services
eRakt Kosh	Blood banks
eVIN	Immunization logistics
Kilkari	Immunization compliance
NHP	National health portal for national guidelines
Mera aspatal	For OPD registration
mDiabetes	Diabetes awareness
m-cessation	To quit smoking
NIKSHAY	TB drug compliance
NIKUSHT	Leprosy drug compliance

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Training modules	Aim
DAKSHATA	Training for health care professionals (ASHA, MPW)
UDISHA	Training for anganwadi workers.
SAKSHAM (Stimulating advanced Knowledge for sustainable health management)	Learning information system of MoHFW. Launched by : NIHFW (National Institute Of Family Welfare).

Note : ASHA must complete 23 days of training in a year.

Health planning committee

00:42:02

Committee	Achievements
Bhore committee (1946)	Development of PHC, long term plan, 3 months rural postings, integrate preventive & curative services
Mudaliar	
Chadah committee (1963)	Linked malaria worker with family planning program, BHW (Basic health worker)
Mukherjee	Delinked malaria & family planning program
Jungalwalla	Equal pay for equal work. Non practice allowance.
Kartar singh (1973)	MPW : Multi Purpose Workers
Shrivastava	Referral system, Rome : Reorientation of medical education
Bajaj	Worked on financial norms, manpower norms

MDG & SDG

00:48:08

8 Millennium development goals (2000-2015).

17 Sustainable development goals (2015-2030) & 3rd is for health.

Given by : UN.

Active space

Goal	Target
3.1	By 2030 to reduce global MMR <70/ 1 lac live births.
3.2	By 2030, to reduce : Neonatal mortality rate <12/1000 live births Under five mortality <25/1000 live births
3.3	By 2030, end epidemic of AIDS, TB, malaria & neglected tropical diseases
3.4	By 2030, to reduce premature deaths from non-communicable diseases by 1/3rd

UNICEF

00:50:29

- United Nations International Children Emergency Funds
- Programs : GOBIFFF, BFHI (baby friendly hospital initiative).
- Aim of GOBIFFF : Child survival.
  - G : Growth monitoring.
  - O : ORS.
  - B : Breastfeeding.
  - I : Immunization.
  - F : Female literacy.
  - F : Family planning.
  - F : Fortification of food.

ICD 11

00:51:49

- 3 volumes.
- Arabic numbered chapters.
- 4 categories with 2 subcategories.
- 26 chapters.
- New chapters on :
  a. Sexual health.
  b. Traditional medicine.
  c. Disorders of immune system.
  d. Sleep wake disorders.
- HIV is now under chronic condition (not infectious disease).
- Addictive conditions (gaming, hoarding) classified as separate conditions.
- Updated criteria for PTSD.
- ICD-11 : Linked with other classifications.

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COMMUNITY MEDICINE REVISION 2

NTEP (2021): National Tuberculosis Elimination Program

00:00:21

- Earlier known as RNTCP : Revised National Tuberculosis Control Program.
- Component : DOTS (Directly observed treatment short course).

Targets :

End TB.

World TB day : 24th march.

Theme for 2023 : Yes! We can end TB.

Targets	India	SDG	End TB(WHO)
To end TB by	2025	2030	2035
Reduction in number of TB deaths by	90%	90%	95%
Reduction in TB incidence rate to	80%	80%	90%
To Reduce catastrophic costs due to TB to	0	0	0

Case definitions :

Presumptive TB case :

Person with fever or cough or weight loss or night sweats for 14 days.

Can be drug sensitive or resistant.

Drug resistant TB (DRTB) : Types

TB Resistance	
H mono drug resistance	Resistance to Isoniazid (INH) : m/c drug resistance.
Multi drug resistance (MDR TB)	Resistance to Isoniazid (H) and Rifampicin (R).
Pre-extensively drug resistant TB (Pre XDR TB)	Resistance to : H + R (MDR TB) + Any Fluoroquinolones (FQ).
Extensively drug resistant TB (XDR TB)	Resistance to : H + R (MDR TB) + Any Fluoroquinolones (FQ) + Any Group A drugs.
RR TB	Resistance to Rifampicin only.

Active space

Group A drugs :

1. Levofloxacin (Lfx).
2. Moxifloxacin (Mfx).
3. Bedaquiline (Bdq).
4. Linezolid (Lzd).

Outcome case definitions :

1. Recurrent TB (Relapse TB)	Sputum becomes +ve after complete cure.
2. Loss to follow up (Earlier, K/a defaulter)	Patient on Rx x 1 month with interruption in Rx x 1 month.
3. Cured	Completed Rx & has sputum -ve report.
4. Treatment completed	Only Rx completed but no sputum -ve report.
5. Failure of treatment	Sputum becomes +ve after previous sputum -ve report (or) sputum +ve even at 5th month of Rx.

Diagnostic modalities :

00:11:04

1. Chest X-Ray (CXR) : Non specific & non sensitive, cavitations can be seen.
2. Sputum for AFB : High sensitivity, IOC for diagnosis of TB.
   - 5 ml of expectorated sputum taken.
   - Tested within 24 hrs of collection.
   - 2 samples taken :
     a. Spot sample (A).
     b. Morning sample (B).
   - If any 1 sample positive-inference : sputum +ve.
3. CBNAAT : Cartridge based nucleic acid amplification test.
   a. Report is obtained within 2hrs.
   b. Rifampicin sensitivity status is given.
   c. Highly sensitive and specific test.

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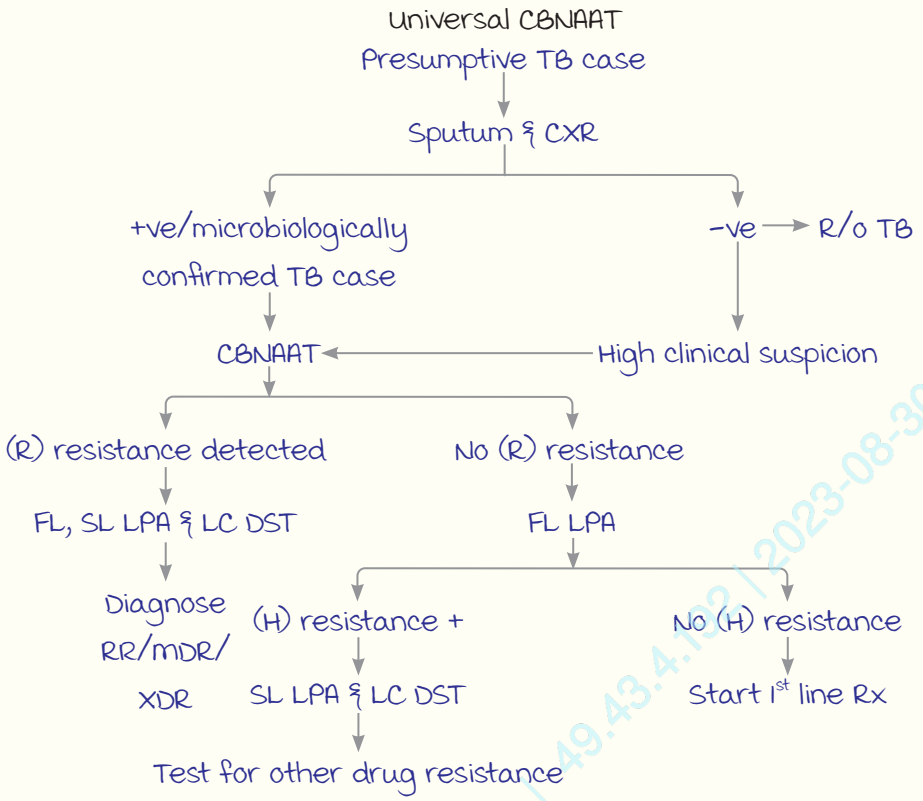

First line line probe assay (FL LPA) : Tells about INH drug resistance.

Second line line probe assay (SL LPA) : Tells about other drug resistance.

LC : Liquid culture. DST : Drug susceptibility test.

4. TruNAAT : Indigenous device, cheaper. (IOC for diagnosis of TB in India).
   - Report within 1 hr.
   - Rifampicin sensitivity status is given.
5. LPA : Result within 1-3 days.
6. Culture :
   a. Liquid culture (LC) ; Gold standard. Results within 6-8 days (1-3 weeks).
   b. Solid culture (LJ media) : Results within 6-9 weeks.

Management of TB :

00:20:54

Active space

Regimen class	Intensive Phase	Continuation Phase
DSTB (Drug sensitive TB)		
DSTB	HRZE (2 months) • Isoniazid (H). • Rifampicin (R). • Ethambutol (E). • Pyrazinamide (Z).	HRE (4 months)
DRTB (Drug resistant TB)		
H mono/poly DR-TB	ZERO (6 months)	
Shorter MDR/RR-TB	CHOBZEE (4-6 months) • Clofazimine. • High dose Isoniazid. • Levofloxacin (O). • Bedaquiline. • Pyrazinamide. • Ethambutol. • Ethionamide.	COZE (5 months) • Clofazimine. • Levofloxacin. • Pyrazinamide. • Ethambutol.
Longer MDR	Ca La B (18-20 months) (Oral regimen) • Levofloxacin. • Linezolid. • Bedaquiline. • Cycloserine. • Clofazimine.	

Recent advances in Mx modalities :

BPaL regime : Small centre research protocol in India.

TB preventive therapy :

00:25:17

Contacts of	Prophylactic TB treatment
Drug sensitive TB.	• 6 months of INH prophylaxis (or) • Short TPT : 3 months of weekly rifapentine(P) & isoniazid(H) → 3HP.
RR TB, FQ sensitive.	6 months daily levofloxacin (6Lfx).
H resistant, rifampicin sensitive.	4 months daily rifampicin (4R).

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TB surveillance & case finding :

00:26:49

Passive case finding	Intensified case finding/ Bi-directional case finding	Active case finding
Patient comes to OPD.	Opportunistic finding of cases that have come for testing of other comorbidities. E.g : TB-COVID screening.	Active searching of TB cases among the vulnerable population. • Malnourished children. • Factory workers. • Contacts of TB. • Healthcare workers.

Indicators for TB evaluation :

Prevalence of TB :
Incidence of TB : } Indicator of TB evaluation.

Note : Annual Risk of TB Infections (ARTI) is not used as an indicator of burden of TB.

Organisation of NTEP :

00:31:24

MoHFW
↓
Central TB Division
↓
State TB cell
↓
District hospital : District TB Center — Administrative unit.
↓
Block BPHC/CHC : Tuberculosis unit — Main functioning unit.
1 per 2-5 lakh population.
Has :
• TB medical officer (MO).
• STLS (Senior TB lab supervisor).
• STS (Senior treatment supervisor).
↓
PHC/BPHC : TB Testing center
• AKa TB diagnostic centre.
• 1 per 10-50K population.
↓
Health & wellness center : TB treatment (DOT) center

Note :
Prevalence of TB : 312 per lakh.
IPC 269 and 270 : Neglected TB notification.

Incentives in NTEP :

00:35:05

Notification of TB (ASHA worker)	INR 500
Private provider incentive	INR 500 (For notification) INR 500 (For reporting Rx outcome)
TB treatment completion	INR 1000 DSTB, upto 5000 DRTB
Nikshay POSHAN yojana (Nutrition)	INR 500/month

Additional programs for TB :

Nikshay mitra yojana : TB patients are adopted & various supports are provided.

TB mukth bharat : Food baskets (Nutrition) provided to TB patients.

Tuberculin skin testing :

00:36:49

- Antigen : PPD RT23 with tween 80.
- Dose : 0.1 mL.
- Route : I/D.
- Read at 48–96 hours (Best answer : 72 hrs).

Interpretation : < 6 ⟶ Negative.

Positive if	In case of
> 5 mm	HIV, severe immunosuppression, close contacts of TB, h/o prior TB.
> 10 mm	Recent immigrants, iv drug users, age < 4yrs, health care workers.
> 15 mm	No additional risk factors required.

NACO guidelines

00:38:36

National AIDS Control Organisation (Under MoHFW).

HIV epidemiology :

Types : HIV 1 & HIV 2.

m/c HIV in India is HIV 1 of group M & subgroup C.

Targets of NACO :

00:40:17

Target : Universal ART (Anti retro viral therapy).

----- Active space -----

90-90-90-90 strategy :

Diagnosis :

Done at Integrated counseling and testing centers (ICTC).

ICTC centre :

- Fixed facility ICTC centre :
  a. Stand alone ICTC : For high load of HIV.
  b. Facility integrated ICTC : For low load of HIV.
- Mobile ICTC.
- Community based HIV screening.

Screening tests : ERS.

1. ELISA.
2. Rapid test.
3. Dried blood Spot test.

Confirmatory tests :

1. Western blot.
2. HIV DNA-PCR (IOC in children; age <2 yrs).
3. p24 viral antigen test (Earliest marker for HIV infection).

Note : CD4 count measures the pt's response to ART, not of any diagnostic value.

Applied aspect :

Clinical scenarios	ERS screening tests	Inference	Next step in Mx
Blood donation	Any 1 +ve	HIV probable +ve	Discard blood
Symptomatic patient (Eg : Esophageal candidiasis)	Any 2 +ve	HIV probable +ve	Refer for confirmatory tests
Asymptomatic patient (Eg : ANC checkup)	All 3 +ve	HIV probable +ve	

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Active space

Management of HIV :

Adults	Child > 6 years & Pregnancy	Neonates/child < 6 years /> 20 Kgs
Tenofovir (TDF) S/E : Nephrotoxic Lamivudine (3TC) Dolutegravir (DTG)	Zidovudine (AZT) S/E : Anemia (or) Abacavir (ABC) Lamivudine (3TC) Dolutegravir (DTG)	Zidovudine (or) Abacavir Lamivudine (3TC) Lopinavir/ritonavir(LPV/r) (or) Raltegravir (RAL)

HIV prophylaxis :

Post exposure prophylaxis :

Tenofovir, Lamivudine & Dolutegravir x 4 weeks OD.

Alternatively :

Tenofovir, Lamivudine X OD & LPV /r x BD

Opportunistic Infections :

m/c opportunistic infection in HIV : Pulmonary TB.

All cases of HIV → CBNAAT >> Sputum testing —R/O active TB→ IPT

Isoniazid preventive therapy (IPT) :

Given for all cases of HIV including pregnant females.

Age > 1yr.

Duration : 6 months.

Cotrimoxazole Preventive therapy (CPT) :

For Pneumocystis jirovecii.

Dose : Double strength cotrimoxazole (TMP/SMX) tablets.

Trimethoprim (TMP) : 160 mg &

Sulfamethoxazole (SMX) : 800 mg.

Start	CD4 < 350/mm^3
Stop	CD4>350/mm^3 on 2 occasions for atleast 6 months + no HIV stage III or IV

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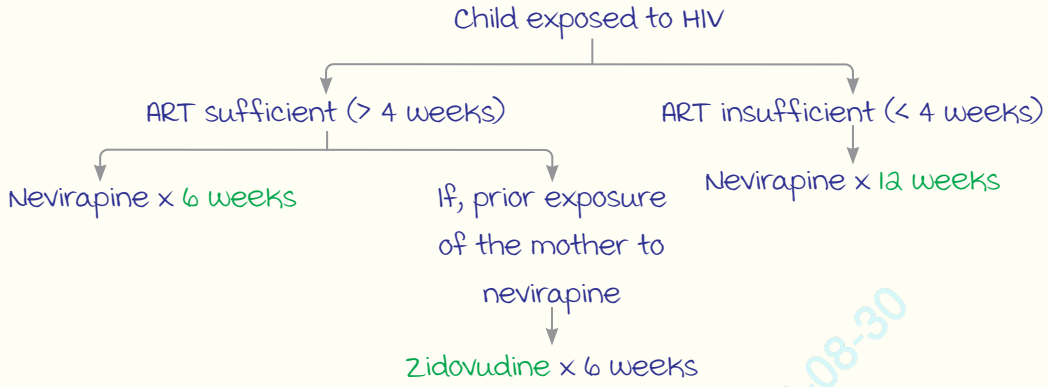
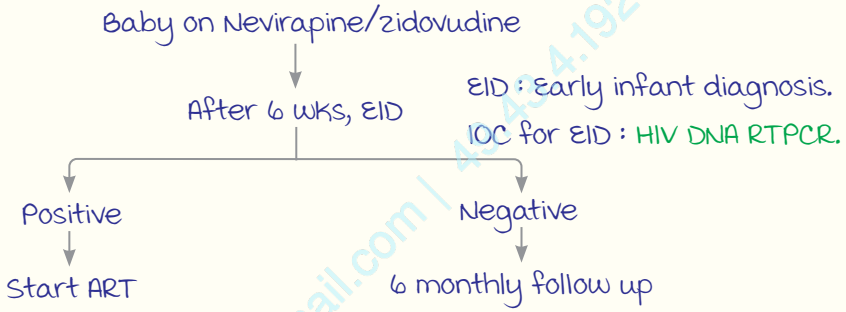
Prevention of mother to child transmission (MTCT) :

DOC to prevent MTCT : Nevirapine.



In high risk babies (low birth weight, other co-morbidities) : Nevirapine + zidovudine.



Breastfeeding :

- If baby is HIV +ve : Breastfeeding for 2 years.
- If baby is HIV -ve : Breastfeeding for 1 year.

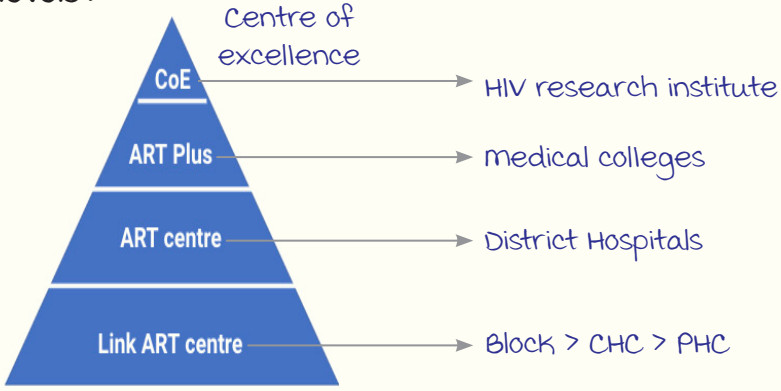
Avoid abrupt stopping of breast milk or changing the types of milk.

HIV TB coinfection :

If patient has both HIV & TB → Start ATT first → After 2 weeks → ART.

Here, in ATT regime Rifampicin (S/E : Enzyme inducer), is replaced by Rifabutin.

Organization levels :



Link workers : From general community (Population).

----- Active space -----

NACO HIV sentinel surveillance :

Total number of groups : 7.

General population	Bridge population	High risk population
ANC females	Single male migrants	Female sex worker
		Male having sex with male
	Long distance truck drivers	I/V drug users
		Transgender

Not included in the sentinel surveillance :

1. TB centres.
2. STD clinics.

NACO district categorization :

Prevalence of HIV in ANC females	Prevalence in high risk groups		Category
> 1%	–		A
< 1%	> 5% in the high risk group		B
	< 5%	Hot spots present	C
		No hot spots	D

Applied aspect :

1. Percentage of individuals who show a positive reaction to a standard tuberculin test is the prevalence of infection.
2. In a patient with sputum negative & CXR positive, the next step is CBNAAT.

----- Active space -----

COMMUNITY MEDICINE REVISION 3

National Vector Borne Disease Control Program (NVBDCP) 00:00:15

The diseases covered under the program are:

1. Malaria.
2. Dengue.
3. Japanese Encephalitis.
4. Chikungunya.
5. Lymphatic Filariasis.

— Mosquito borne

6. Kala Azar : Sandfly.

Important dates :

- World Neglected Tropical Disease Day (Theme : Act now, Act together, Invest in neglected tropical diseases) : 30th January.
- World Malaria Day : 25 April.
- World Dengue Day : 16 May.
- Anti Malaria Month : June.
- Anti Dengue Month : July.

World neglected tropical disease day

Theme : World Malaria Day 2023 : Time to deliver zero malaria : Invest, innovate, implement.

Targets of NVBDCP :

1. Annual Parasite Index (API) : < 1/ 1,000 (malaria).
2. Annual Blood Examination Rate (ABER) : > 10% (malaria).
3. Elimination of lymphatic filariasis : <1% microfilaremia.
4. Control of dengue, chikungunya, Kala azar, JE.

Malaria 00:06:00

Diagnosis :

- Done with a peripheral blood smear:
  a. Thick slide smear : Identification of parasite.
  b. Thin slide smear : Identification of species .
- m/c species of malaria in india : P. falciparum.
- P. ovale is not found in India.

Active space

Treatment :

P. vivax : Chloroquine + Primaquine (drugs of choice) .

- 25mg/kg over 3 days:
  - D1 – 10mg/kg
  - D2 – 10mg/kg
  - D3 – 5mg/kg
- 0.25 mg/kg x 14 days

P. falciparum : Artemisenin based combination therapy (ACT).

- Chloroquine is not useful.
- ACT is of two types :

ACT – SP	ACT – AL
Artesunate S : Sulphadoxine P : Pyromethamine	A : Artemether L : Lumefantrine
Given in all states except north-east ACT-SP x 3d + Primaquine (D2)	Given in the north eastern states ACT-AL x 3d + Primaquine (D2)

A, S, P on day 1 (D1). Artesunate on D2 & D3 + Primaquine on D2.

P. falciparum in pregnancy :

- 1st Trimester : Quinine salt.
- 2nd Trimester : Area specific ACT.
- Primaquine is C/I in :
  a. Pregnancy.
  b. Infants.
  c. G-6 PD deficiency.

Drugs used in P. falciparum :

Drug	Dosage
Artesunate	4mg/kg x 3d
Primaquine	0.75mg/kg on D2

Mixed infections :

- P. falciparum + P. vivax co-infection.
- Area specific ACT x 3d + Primaquine X 14d.

----- Active space -----

Prophylaxis :

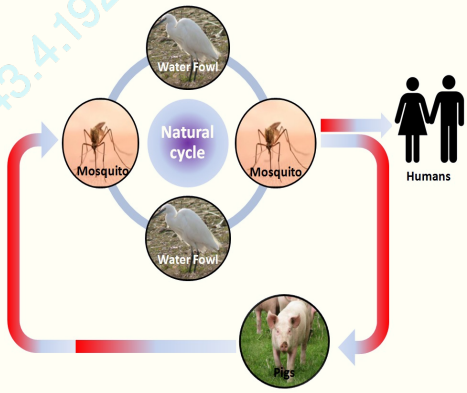
- Taken by people from non-endemic areas, travelling to endemic areas.
- It is of 2 types :

Short Term (<6 wks)	Long Term (>6 wks)
DOC : Doxycycline 100mg	DOC : Mefloquine 250 mg
Daily tablet	Weekly tablet
• 1-2 days before travel. • Continued during travel. • Upto 4 weeks after travel.	• 2 to 3 weeks before travel. • Continued during travel. • Upto 4 weeks after travel.

Japanese encephalitis

00:19:04

- Amplifying host : Pig.
- Maintenance host : Ardeid birds (water fowls, pond herons), cows.
- Brakes of transmission : Cows.
- Humans : Dead end host.
- Vector : Culex mosquito.
- m/c seen in : Southern India (coastal areas), eastern UP, Bihar.
- Susceptible environments ; Stagnant water, paddy fields, rural areas.



- C/F : Fever, altered mental status, emotional sensitivity, severe headache.
- Dx : RTPCR.

Prevention :

JE prevention under NVBDCP : Live vaccines are no more used for prevention.

JE Live Vaccine	JE Killed vaccine
VVM on the cap of vial	VVM on the body of vial
Does not follow open vial policy	Follows open vial policy
Heat sensitive	Freeze sensitive
Reconstituted with phosphate saline	No reconstitution required
Left upper arm	Left antero-lateral thigh
Subcutaneous	Intramuscular

Active space

Japanese encephalitis Killed vaccine :

- Dose : 0.5 ml.
- Schedule : At 9 months → Repeat dose at 16-24 months.
- If unimmunized can be given till 15 years of age.
- Open vial policy : Use within 28 days of opening the vial.

Kala Azar

00:26:47

Vector : Sand fly.

a. Lanceolate wings.
b. Flight range : None (only hops).
c. Hairy (does not support flight).
d. Nocturnal eater : Painful bite.

Investigations :

- Diagnosis : Serological test : RK 39 (IOC).
- Test of choice for surveillance at community level : Aldehyde test of Napier.
- Gold standard : Identification of LD Bodies from culture (spleen/blood smear).

Management :

- Drug of choice : Single Injection liposomal Amphotericin B.
- Miltefosine (2nd line) : Oral x 28 days.
- Paromomycin (3rd line).

Lymphatic filariasis

00:29:22

Vectors : Culex quinquefaciatus (culex fatigans) : Bancroftian filariasis.
Mansonoides : Brugian filariasis.

Causative organisms :

- Wuchereria bancrofti (m/c in India).
- Brugia malayi and Brugia timori.

Epidemiology :

- Infective form : 3rd stage larva of developing microfilaria (mF).
- Portal of entry : Skin.
- Site of localization : Inguino-scrotal region (lymphatics).
- Reservoir of infection : Person with mF in blood.
- Lymphatic filariasis epidemic do not occur due to cyclo-developmental transmission (there is no multiplication) & long life cycle.

----- Active space -----

Clinical presentation :

Category	Symptoms
MF carrier	Asymptomatic, mF circulate in blood.
ADL	Fever with adeno lymphangitis (ADL).
Lymphedema I	Reversible edema overnight, normal skin.
Lymphedema II	Irreversible edema (even with elevation), normal skin, repeated attacks of ADL.
Lymphedema III	Irreversible edema, thickened skin; repeated attacks of ADL.
Lymphedema IV	Irreversible edema, skin fold thickening, pigmentary changes, chronic ulceration.
Hydrocoele	Scrotal swelling.
Chyluria	Milky urine due to lymphatic obstruction.

Diagnosis :

- Investigation of choice : Peripheral blood film.
- Concentration methods :
  a. Membrane filtration (most sensitive).
  b. Knott's technique : Centrifugation of blood sample lysed in 2% formalin solution.
- DEC provocation test : 100mg oral DEC → blood test after one hour
  a. Indicated when peripheral blood film is equivocal /not possible.
  b. Done between 10PM and 2 AM (highest activity of mF in blood at this time).
  c. Expensive, time consuming.

Management :

- Di-ethyl Carbamazine (DEC) at 6 mg/Kg per dose (12 doses) : DoC.

Administration : 6 doses → 2 day gap → 6 doses.

- Mass Drug Administration : (Recent update, Now changed to a bi-annual, 3 drug regime, synchronised with national deworming day : 10 Feb, 10 August).
  a. DEC : 6 mg/kg/day.
  b. Albendazole : 400 mg.
  c. Ivermectin : 150 to 200 mcg/kg.
  d. In some areas : DEC medicated salt (1-4 gms of DEC/kg).

Dengue

00:37:55

Active space

- 4 serotyoes : DEN (1-4) (no cross protection).

Patterns of disease :

- Dengue fever (DF) :
  a. High grade, bimodal fever.
  b. Severe body ache.
  c. Retro-orbital pain.
- Dengue hemorrhagic fever (DHF) :
  a. Bleeding (from any natural orifice).
  b. Lab criteria : Increase in hematocrit >20 %.
  c. Clinical criteria : Torniquet test (Cuff tied for 5 mins in upper arm, pressure between SBP & DBP). If >20 petechiae/sq. inch : Pure positive; > 10 = Equivocal (+ if hemodynamically unstable).
- Dengue shock syndrome (DSS) :
  a. SBP <90 mmHg with features of DF or DHF.

Diagnosis :

- NS-1 Ag detection in 1st 5 days of fever.
- IgM Ab (ELISA - McCapture technique) : Used if patient presents after 5 days of fever.

Treatment :

- Symptomatic (IV fluids, antipyretics).

NVBDCP indicators

00:43:00

Malaria :

- Annual Parasitic Incidence (API) : Target < 1 per 1,000 (slide /RDK +)

$$\frac{\text{Number of confirmed cases in a year}}{\text{Population under surveillance}} \times 1{,}000$$

Gives malaria prevalence of the country.
Rapid diagnostic kit (RDK) positivity confirms cases only in NE India.

- Annual Blood Examination Rate (ABER) :

$$\frac{\text{Number of slides examined}}{\text{Population under surveillance}} \times 100$$

Gives fever prevalence of the country (Slides of patient with fever examined).

----- Active space -----

- Slide Positivity Rate (SPR) :

$$\frac{\text{Number of slides positive}}{\text{Number of slides examined}} \times 100$$

Outbreak indicator.

Lymphatic filariasis :

- Microfilaria rate : Percentage of persons showing MF in peripheral blood.
- Filarial endemicity rate : Percentage of persons showing MF in blood or disease presentation or both.

Better indicator as it takes clinical disease prevalence into account.

- Microfilarial density : Number of MF per unit volume of blood (20 cu.mm).

Indicates the intensity of infection in a person.

- Average infestation rate : Average number of MF per positive slide.

Prevelance of MF in a community (target <1%).

Dengue :

- Breteau index : $\frac{\text{No. of containers +ve}}{\text{No. of houses checked}} \times 100$

Yellow fever :

- Aedes Aegypti Index : No. of houses with Aedes larvae within 400 meters of airport or seaports. Should be < 1.

Classification of states in India under NVBDCP :

Classification	API (state)	API (district)	Category
Intensified Malaria Control	> 1	-	3
Pre - elimination Area	< 1	Few districts > 1	2
Elimination Area	< 1	< 1	1
Prevention of re-establishment	-	0	0

Entomology 00:43:00

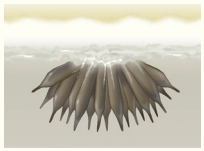
- Anopheles stephensi : Urban (m/c overhead water tanks).
- Anopheles culicifacies : Rural.
- Anopheles fluviatilis : Forests, foothills.

Active space

- Anopheles dirus /sundaicus : Coastal areas, Andaman & Nicobar.
- Culex quinque fasciatus : JE, lymphatic filariasis.
- Mansonia annulifera & uniformis : Brugian filariasis.
- Phlebotomus argentiferus : Sand fly.

Feature	Anopheles	Culex	Aedes	Mansonia
Disease	Malaria	JE, Lymphatic filariasis	Dengue, yellow fever	Lymphatic filariasis
Water	Clean, stagnant	Dirty, polluted	Artificial, stored	Large water body with aquatic vegetation (pistia, water hyacinth)
Egg	Single, boat shaped, lateral floats +	Cluster, in rafts	Single, cigar shaped	Cluster, star shaped
Larva	Surface feeder	Bottom feeder	Bottom feeder	Attach to roots



Feature	Anopheles	Culex	Aedes	Mansonia
Biting time	Dawn, dusk.	Midnight.	Day (2hrs before sunrise & after sunset).	Evening.
Resting place	Exophilic.	Exophilic and endophilic.	Endophilic.	Exophilic.
Flight range	2-3 Kms.	10-11 Kms.	100-200 mts.	2-3 Km.
Resting position	Angled, inclined.	Hunch back.	Parallel to surface.	Long legs, squatting.
Special features	Spots on wings.	Small body, big wings, brown.	Stripes on legs and body.	Long legs, big body.




----- Active space -----

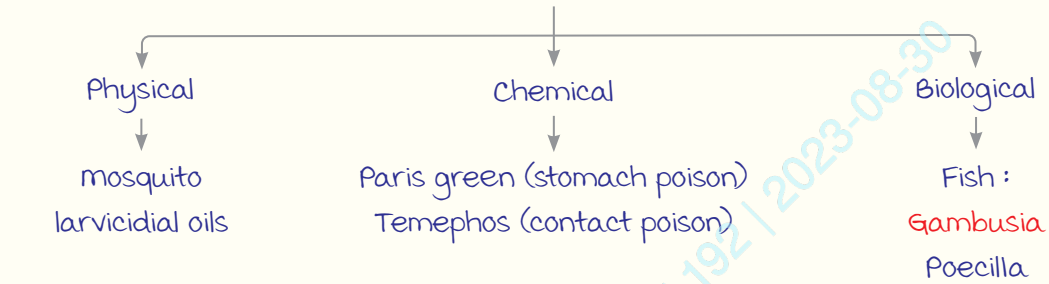
Integrated Vector Control

01:02:56

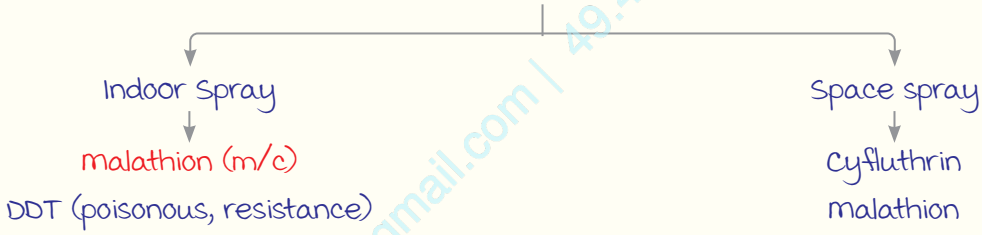
1. Source reduction :

- Anopheles : Remove rain water reduction, cover overhead tanks.
- Culex : Long standing dirty water should be controlled.
- Aedes : Fountains, coolers, indoor plants must be kept clean.

2. Anti – larval measures :



3. Anti – adult measures :



4. Personal protection :

- Bed nets.
- mosquito repellant.

COMMUNITY MEDICINE REVISION 4

Active space

National Polio Surveillance Programme

00:02:17

Polio infection
Inapparent infection (90–95% of all infections)
Abortive infection
Non-paralytic aseptic meningitis
Paralytic polio (< 1% of all infections)

	Vaccine Derived Polio Virus (VDPV)	Vaccine Associated Paralytic Polio (VAPP)
Occurs d/t	Mutations of OPV P2	Immune reaction
Associated strain	OPV P2	OPV P3
Transmission	+ (more dangerous)	-

India was declared as a polio free country on 27th March 2014.

Only countries where polio is still prevalent : Pakistan & Afghanistan.

End game strategic plan : fIPV (fractional inactivated polio vaccine) at 6 weeks & 14 weeks.

National switch day :

- 25th April 2016.
- Trivalent OPV switched to bivalent OPV (with P1 and P3 strains).

Current fIPV regimen in NIS : 6 & 14 weeks in the right upper arm (I/D) & at 9 months in the left upper arm (as MR vaccine is given in the RUA at 9 months).

National Polio Surveillance Program :

- Surveillance for acute flaccid paralysis (AFP) in children.
- Sample collection < 48 hours of reporting an AFP case.
- Two stool samples, with a minimum gap of 24 hours < 14 days.
- Stool samples must reach the laboratory <72 hours of collection (weight >8g & reverse cold chain at a temperature of 2 - 8°C).
- Residual paralysis assessment after 60 days.

----- Active space -----

AFP surveillance :

Surveillance Indicators	Target
Sensitivity of surveillance	> 1 AFP / lac / year in age < 15 years.
Completeness of case investigation	> 80% adequate stool sample collection.
Completeness of follow up	> 80% AFP cases should have the residual paralysis check at 60 days.
Operation efficacy	Stool sample should reach the laboratory within 72 hours of collection.

Causes of AFP

- Poliomyelitis.
- Guillain-Barre syndrome.
- Transverse myelitis.
- Traumatic neuritis.
- Enterovirus infections (71 & 72).

National Programme for Control of Blindness and Visual Impairment (NPCBVI)

00:14:05

Funding : Danish International Development Agency (DANIDA).

Target : To reduce the prevalence of blindness to <0.25%.

NPCBVI logo

Organization :

	Vision centers (CoE)	Service centers	Training centers	Centers of excellence
Level	Primary	Secondary	Tertiary	Apex
Staff	Optometrists	Ophthalmologists	Senior ophthalmologists	Senior ophthalmologists + program managers
Number	20,000	2,000	200	20
Functions	• Basic eye care. • Monitor school health programs.	• Minor eye surgeries : Cataract & lid surgeries.	• Training. • Major eye surgeries : Corneal transplantation, & retinal, eye tumor & glaucoma surgeries.	• Make guidelines. • Research.

Active space

Visual impairment :

Terminology	Visual acuity in the better eye with available correction
Visual impairment	<6/18
Blindness	<3/60

Functional low vision : Impairment of visual functioning post Rx/ standard refractive correction + visual acuity of <6/18 + has the ability to utilize vision for planning & executing tasks.

NPCBVI Survey Report (2015 – 2019) :

Prevalence of blindness : 0.36%.

m/c causes :

	Visual impairment	Blindness
< 50 years	Refractive error	Corneal opacity
> 50 years	1. Cataract 2. Refractory error 3. Post cataract surgery complications	1. Cataract 2. Corneal opacity

National Leprosy Eradication Programme (NLEP) 00:23:02

Targets :

- To reduce prevalence rate to < 1/ 10,000 population at the sub national & district level (achieved in 2005).
- To reduce grade II disability % to < 1% among new cases & < 1 case/million population at the national level.
- Zero disabilities among new child cases.
- Zero stigma and discrimination against persons affected by leprosy.

NLEP logo

Vision : Leprosy Mukt Bharat by 2027.

Clinical features :

Cardinal features of leprosy :

- Hypo-pigmented patch or reddish patch with hypo-anesthesia.
- Nerve thickening with sensory/motor deficits.
- AFB in slit skin smear examination.

Epidemiological characteristics of leprosy :

- Transmission : Nasal secretions.
- Prophylaxis : Single dose of Rifampicin.

----- Active space -----

- Vaccine : MIP (mycobacterium indicus pranii) vaccine (MW vaccine).
- Patients become non-infectious after 4 weeks of Rx.

Types of leprosy :

	Paucibacillary (PB)	Multibacillary (MB)
Lesions	< 5	> 5
Nerve involvement	None or 1	≥ 2
AFB	–	+

Treatment for leprosy :

3 drug regime : Multi-drug therapy (MDT) with rifampicin, clofazimine & dapsone is used for both MB & PB leprosy.

Duration of treatment :

- MB leprosy : 12 months.
- PB leprosy : 6 months.

Dosage and frequency :

	Rifampicin	Clofazimine	Dapsone
Adults	600 mg once a month	300mg once a month + 50mg daily	100mg daily
Children : 10 – 14 years	450 mg once a month	150mg once a month + 50mg alternate days	50mg daily

MDT blister packs for leprosy :

Adults : Red

Children (10–14 years) : Brown

Active space

Essential indicators for leprosy :

1. Annual New Case Detection Rate (ANCDR)/100,000 population.
2. Prevalence Rate (PR) /10,000 population.
3. Rate of new cases with Grade II disabilities/10,00,000 population/year.
4. Treatment Completion Rate (TCR) .

Mascots for leprosy awareness

Sapna : NLEP

Meena : UNICEF

Newer strategies in NLEP :

- Welfare allowance of Rs 8000-12,000 for reconstructive surgeries.
- ASHA-Based Surveillance for Leprosy Suspects (ABSULS).
- National Strategic Plan and Road-map for Leprosy (2023-27) and National Guidelines for Antimicrobial Resistance (AMR) Surveillance in leprosy (January 2023).
- Nikusth 2.0 : Integrated portal for reporting & case management of leprosy.

National Iodine Deficiency Disorder Control Programme (NIDDCP)

00:34:06

Target : To achieve <5% goiter rate among children.

Strategy :

Iodization of salt (best strategy).

Salt Commissioner under the ministry of Commerce and Industry (Headquarters : Jaipur, Rajasthan) ensures the iodization of salt at different levels :

- At production level : >30ppm.
- At consumer level : >15ppm.

Organization : District-level.

Indicators :

1. Goiter rate :
   - Should be <5% among school going children.
   - Long term impact indicator.
2. Urinary iodine excretion (UIE) rate :
   - Principal impact indicator.
   - < 20% : Severe public health problem.
3. Iodine in household salt rate : Process indicator.
4. Neonatal hypothyroidism rate : Environmental iodine deficiency indicator.
5. Cretinism rate.

NIDDCP logo

----- Active space -----

Grades of goiter :

Grade 0 : Goiter not visible or palpable.

Grade 1 : Goiter not visible but palpable, and moves with swallowing.

Grade 2 : Goiter visible and palpable.

Grades 1 and 2 are considered while calculating the goiter rate.

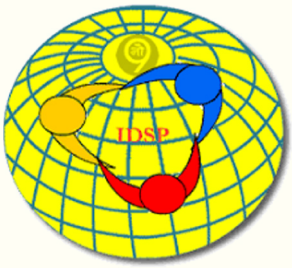
Integrated Disease Surveillance Program 00:40:38

Surveillance under IDSP :

Type of surveillance	Syndromic	Probable	Laboratory
Done by	Health workers	Medical officers	Laboratories
Diagnosis based on	Syndromes & field surveys	History & clinical examination.	Laboratory results

Syndromes assessed by health workers :

1. Fever.
2. Cough < 2 weeks.
3. Acute flaccid paralysis in children < 15 years.
4. Diarrhea ≥ 3 stool / day.
5. Jaundice.
6. Unusual events causing death or hospitalization.



IDSP logo

National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke 00:42:29

Includes prevention for : COPD, CKD, RF.

January 2023 updates :

- Name : National Programme for Prevention & Control of Non-Communicable Diseases (NP-NCD) by MOHFW.
- Cardiovascular-related deaths : Highest cause-specific mortality rate (27%).
- 28.6% of adults use tobacco (A major risk factor for NCDs).

Active space

Obesity Indicators

00:45:32

$$\text{Body mass index (BMI)} = \frac{\text{Weight (Kg)}}{\text{Height}^2\text{ (meter)}}$$

- Best indicator. Ideal BMI in South Asians : 18.5 – 22.9

$$\text{Ponderal index} = \frac{\text{Height (cm)}}{\sqrt[3]{\text{Body weight (Kg)}}}$$

- Used in children.

$$\text{Corpulence index} = \frac{\text{Actual weight (Kg)}}{\text{Desirable weight (Kg)}}$$

$$\text{Broca's index} = \text{Height (cm)} - 100$$

- Clinical indicator/ gross method to calculate ideal weight.

Cancer Registry

00:46:37

Incidence of cancer by gender as per WHO GLOBOCAN :

	Male	Female	Both genders
India	1. Lip/oral 2. Lung 3. Stomach/esophagus	1. Breast 2. Cervix uteri 3. Ovary	1. Breast 2. Lip/oral 3. Cervix uteri
World	1. Lung 2. Prostate 3. Colorectal	1. Breast 2. Colorectal 3. Lung	1. Breast 2. Lung 3. Colorectal

Cancer with maximum incidence and mortality : Breast cancer.

Employee State Insurance Scheme

00:48:34

Under the Ministry of Labor.

Organization criteria :

All organizations using high power with > 10 employees or low power with > 20 employees included under the ESI scheme, except for :

- Defense
- Railways
- Mines
- Central government

Salary criteria : All persons with monthly salary < Rs 21,000/month.

----- Active space -----

Premium :

- Employee : 0.75% of wage
- Employer : 3.25% of wage

Benefits :

Sickness benefit : 91 days of leave at 70% of wage.

Extended sickness benefit : 2 years of leave at 80% of wage (34 diseases).

Medical benefit (enhanced sickness) : For permanent sterilization .

- Tubectomy : 14 days of leave.
- Vasectomy : 7 days of leave.

Maternity benefit :

- Delivery services : 26 weeks of leave.
- Medical conditions affecting pregnancy : 4 weeks of leave.

Dependent benefit : For spouse & children < 18 years of age.

Disability benefit : For temporary & permanent disabilities

Funeral expenses : Rs 15,000 paid to aggrieved family.

Rajiv Gandhi Shramik Kalyan Yojana :

50% wage can be availed for 2 years in the following circumstances :

- Forceful closure.
- Retrenchment (lay-off).
- Non-occupational injury .

School Health Services/Programme

00:54:23

Criterias :

Land	Classroom	Toilets
• Primary school : > 5 acres. • Higher secondary school : >10 acres. • 1 acre/100 students. • Playground.	• Capacity : Maximum of 40 students. • Space : Minimum of 10 sq feet per student. • Color of walls : White. • Light : Preferably shines from left side. • Desk : Minus type.	• Urinal : 1/60 students. • Latrine : 1/100 students.

In-charge : Medical officer of a PHC.

Survey : School teacher.

New Policies/ Initiatives by MoHFW

00:56:01

Active space

Ayushman Bharat Scheme :

Pradhan Mantri Jan Arogya Yojana (PM-JAY) :

- Upto 5 lakh health cover per family per year.
- No limit on members, age or type of illness.

Comprehensive Primary Health Care (CPHC) :

- Health and Wellness Centres (HWCs) set up.
- New post : Community Health Officer (CHO).

Prime Minister's Overarching Scheme for Holistic Nourishment (POSHAN Abhiyan) :

- Under Ministry of Health and Family Welfare.
- Aims to improve nutritional status of children from 0-6 years, adolescent girls, pregnant women & lactating mothers.
- Targets for 3 years → To reduce :
  - Low birth weight by 6% at 2%/year
  - Anemia by 9% at 3%/year

Poshan Shakti Nirman Scheme (POSHAN Scheme) :

- Previously termed as Mid-day meal scheme.
- Under Ministry of education.
- Beneficiaries : Balvatika (pre-school) + Class I to class VIII students.
- Nutrition provided :

	Primary classes	Upper primary classes
Calories	450	700
Proteins	12 g	20 g

Awards and Incentives

01:00:36

- Kayakalp : Sanitation & cleanliness in public hospitals.
- Nirmal gram : Sanitation & cleanliness of safe water supply in villages.
- Swachh bharat : Sanitation, cleanliness & solid waste management in the country.

Note :

- SaQushal Scheme : Safety and Quality, Self Assessment tool for Health Facilities.
- MusQan Scheme : Ensuring Child Friendly Services in Public Health Facilities.

----- Active space -----

National Schemes/Policies

01:01:39

Ujala scheme :
For energy efficient lighting by LED bulbs.

Pradhan Mantri Ujjwala Yojana (PMUY) :

- Safer fuels
- Under petroleum ministry.

Ujjwala

Ujjawala scheme :
To stop human trafficking, child abuse, sexual abuse etc.

Ujjawala scheme

Mission Shakti : For women empowerment.

- Under Ministry of Women & Child Development.
- Sambal : Safety & security of women.
- Samarthya : Women empowerment.
- Includes Ujjawala, Pradhan Mantri Matru Vandana Yojana, Swadhar Greh & National Creche Scheme.

Mission Indradhanush : For safe vaccine & universal vaccine coverage.
Indradhanush scheme : Cleanliness & hygiene of hospitals. 7 colored bedsheets for 7 days of the week in ESI hospitals.

AMRIT scheme : Affordable Medicines and Reliable Implants for Treatment (Low cost implants).
AMRUT : Atal Mission for Rejuvenation and Urban Transformation (To improve housing capacities & sanitation in urban area).
PMSSY : PM Swasthya Suraksha Yojna .

Jai Vigyan : To know about :

- Rheumatic fever prevalence.
- Streptococcal infection prevalence.
- Vaccine development for RHD/RF.

Vyoshri Yojna : For safeguarding the health of elderly population.

Essential Medicines

01:03:59

- Counterfeit medicines : Intentionally made to deceive.
- Sub-standard medicines : Authorized medical products that are out of specification & do not meet quality standards.

- Falsified medical products : Deliberately misrepresent the identity or source of composition.
- Unregistered medical products : Not evaluated or approved.

Active space

These products are monitored by Central Drugs Standard Control Organisation (CDSCO), under the Ministry of Health & Family Welfare.

Newer Initiatives under NTEP, MoHFW

01:06:33

- Nikshay-mitra scheme : Community participation to adopt & support TB patients + end discrimination.
- TB mukt Bharat scheme : Community support for nutrition and diagnostics of TB patients.
- 99 DOTS, Medicine Event Reminder Systems (MERM) : For TB treatment compliance.
- 6(H) and 3(HP) : New prophylaxis regime : Isoniazid + Rifapentine – 3 months.
- All oral Bedaquiline regime for MDR TB.

Health Budget February 2023

01:07:42

- Sickle cell anemia elimination mission + universal screening of 7 crore people in affected tribal areas to be launched.
- Dedicated multidisciplinary courses for medical devices.
- Current GDP % spending on health : 2.1% (Target of → 2.5% by 2025).

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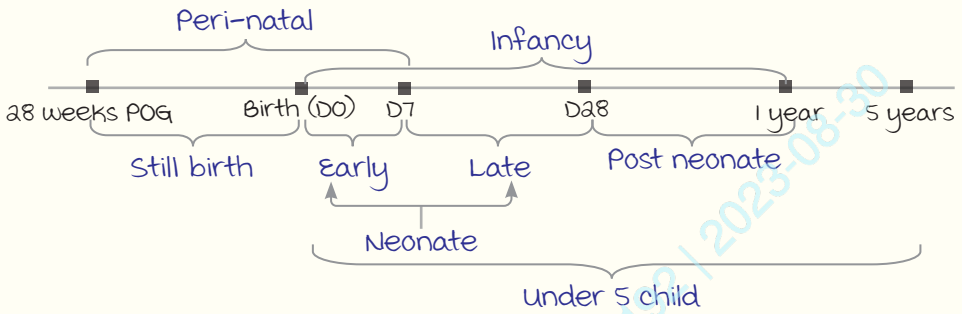
COMMUNITY MEDICINE REVISION 5

Mother and child health (MCH) indicators

00:01:40

Important time periods :



Still birth : Fetal death + >28 weeks POG or fetus >1000 gm or fetus >35 cm in crown rump length.

Period of viability for Govt. of India : 28 week POG. As per WHO : 22 weeks POG.

Important data & formulas :

Indicators	Formula	m/c cause
Child mortality/ death rate	$\frac{\text{No. of deaths of children (1–4 year)}}{\text{Total children (1–4 year)}} \times 1000$	Injuries
Infant mortality rate	$\frac{\text{Total no. of infant deaths}}{\text{Live births}} \times 1000$	Prematurity & low birth weight
Neonatal Mortality Rate (NNMR)	$\frac{\text{Total no. of neonatal deaths}}{\text{Live births}} \times 1000$	Prematurity > low birth weight
Still birth Rate	$\frac{\text{Total no. of still births}}{\text{Total births}} \times 1000$ • Total birth = Still + live births.	Antepartum hemorrhage
Peri-natal mortality rate	$\frac{\text{Still birth + Early NNMR}}{\text{Total births}} \times 1000$	-
Maternal Mortality Ratio	$\frac{\text{Maternal Deaths}}{\text{Live births}} \times 100000$ • Current value : 97 per lakh live births.	Postpartum hemorrhage
Under 5 Mortality Rate	$\frac{\text{Death of <5 yr children}}{\text{Live births}} \times 1000$	Prematurity, low birth weight → malnutrition, infections.

maternal death : Death of female < 42 days of delivery d/t pregnancy or related causes (Not including accidents or electrocution).

----- Active space -----

Other Important data :

- Birth rate : 19.5 per 1000 population.
- Death rate : 6.0 per 1000 population.
- Sex ratio : 1020 females per 1000 males.
- Total fertility rate : 2.0.
- Couple protection rate : 67%.
- Annual growth rate : 0.9%.
- Leprosy prevalence : 0.5 per 10,000.
- ANCDR : 8.13 per 1,00,000.

m/c causes :

Resources for cause of death :

- Medical Certification of Cause of Death (MCCD).
- Sample Registration System (SRS), from Govt. of India : Reliable.

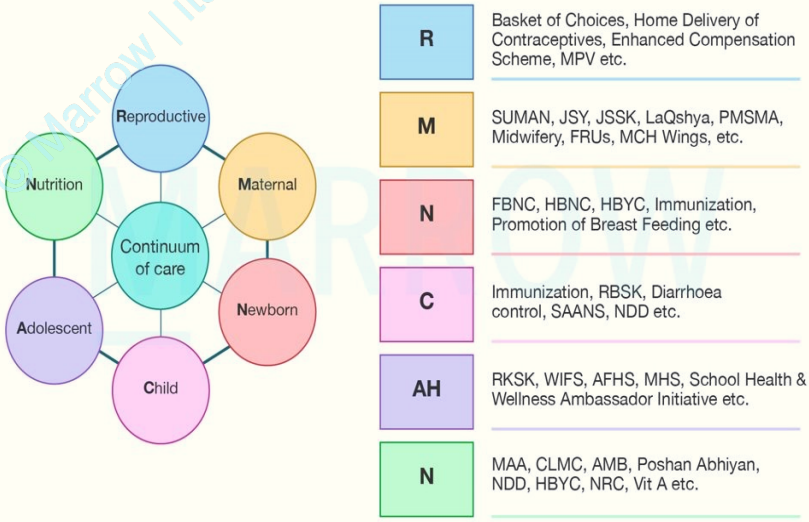
m/c cause of Neonatal deaths (MCCD) : Hypoxia and birth asphyxia.

m/c cause of deaths in all age groups : Cardiovascular related deaths (30%).

RMNCAH+N

00:21:25

RMNCAH + N : Reproductive, Maternal, Neonatal, Child, Adolescent Health + Nutrition.



Strategic interventions under RMNCAH + N

----- Active space -----

Number of visits

00:22:35

Antenatal care visits

MoFHW (National Health Mission)

Minimum
4 visits

- 1st visit : As soon as possible or before 12 weeks.
- 2nd visit : 14–26 weeks.
- 3rd visit : 28–34 weeks.
- 4th visit : 36 weeks–term.

Recommended
13 to 14 visits

- Monthly : 0–7 months.
- Twice monthly : 8th month.
- Weekly : 9th month.

WHO

Minimum
8 visits

- 1st trimester : 1
- 2nd trimester : 2
- 3rd trimester : 5

Post natal care visits :

Minimum number of visits : 4 visits.

- First visit : 1st day of delivery.
- Second visit : 3rd day of delivery.
- Third visit : 7th day of delivery.
- Fourth visit : 6 weeks after delivery.

Nutritional requirements in pregnancy

00:24:45

- Gestational weight gain : 10–12 kg.
- Additional calories needed in pregnancy : 350 kcal/day.
- First trimester : No need of additional 350 kcal/day.

Indian reference woman :

- Non-lactating & non-pregnant.
- Age : 19 – 39 years
- Weight : 55 kg
- Height : 1.62 m
- BMI : 20.95 kg/m^2

Other nutritional requirements (S : sedentary, M : moderate and H : heavy) :

Variable	Non pregnant	Pregnancy			Lactation	
		1st Trimester	2nd Trimester	3rd Trimester	0–6 months	6–12 months
Protein (g/day)	45.7	+0	+9.5	+22	+16.9	+13.2
Energy (kcal/day)	1660 (S) 2130 (M) 2720 (H)	+350 (average)			+600	+520
Iron (mg/day)	29	27			23	
Calcium (mg/day)	1000	1000			1200	

Screening in pregnancy

00:28:55

----- Active space -----

- Rurals : Hb, urine proteins & sugars + malaria (In endemic areas)
- Urban : Hb, urine proteins & sugars + Gestational diabetes mellitus (GDM) tests, and infections (HIV, Hep B and VDRL for syphilis).

Note : A pregnant woman can always "opt-out" of HIV screening.

GDM screening guidelines :

00:31:57

OGTT at 1st antenatal visit
(< 12 weeks : 1 step).

Negative → Repeat test at 24-28 weeks
- Positive → Medical Nutritional Therapy (MNT)
- Negative → Manage as normal pregnancy

Positive → Medical Nutritional Therapy (MNT)

OGTT after 2 weeks

< 120 mg/dL : Continue MNT.
Monitor 2h PP glucose :
- Up to 28 weeks : Once in 2 weeks.
- After 28 weeks : Once in a week.

≥ 120 mg/dL :
Start insulin therapy.
Monitor PP glucose every week.

OGTT : Oral glucose tolerance test (Single step).

- 75 grams of anhydrous glucose administered to a non-fasting pregnant woman → after 2 hours → Plasma glucose checked.
- Positive test : ≥ 140 mg/dL after 2 hours.

Vaccines in pregnancy :

- 2 doses of Td (Tetanus toxoid + diphtheria (low dose)) given 4 weeks apart.
- Completely immunized (Within last 3 years) : 1 booster dose sufficient.

----- Active space -----

MCH care initiatives by Govt. of India

00:35:05

<table>
<tr><th>Program name</th><th>Remarks</th></tr>
<tr><td>HBNC : Home-Based Newborn Care</td><td>Done by ASHA worker.
Total visits :
• Normal delivery : 6 (Day 3, 7, 14, 21, 28, 42).
• Home delivery : 6 + 1 (Additional visit on day 1).
• C- section : Total 5 visits (No day 3 visit).
Benefit to ASHA : Rs. 250 on day 45, if baby is alive.
They provide 6 recordings of body weight of the child.</td></tr>
<tr><td>HBYC : Home-Based Young child Care</td><td>• 3 monthly home visits by ASHA.
• Starting from 3 months to 1 ½ years age of baby.</td></tr>
<tr><td>JSY : Janani Suraksha Yojana</td><td>To promote institutional delivery.
Cash incentives :
<table>
<tr><th></th><th>Mother</th><th>ASHA</th></tr>
<tr><td colspan="3">Low performing states</td></tr>
<tr><td>Rural</td><td>1400</td><td>600</td></tr>
<tr><td>Urban</td><td>1000</td><td>400</td></tr>
<tr><td colspan="3">High performing states</td></tr>
<tr><td>Rural</td><td>700</td><td>600</td></tr>
<tr><td>Urban</td><td>600</td><td>400</td></tr>
</table></td></tr>
<tr><td>JSSK : Janani Shishu Suraksha Karyakram</td><td>• Increased utilization of public health facilities.
• Pregnant mother + sick infant : Free OPD, IPD, investigations, treatment & transport.
• Shishu (Added component) : Child <1 year of age.</td></tr>
<tr><td>LaQshya : Labor room Quality Improvement Initiative</td><td>• Improving quality of labor room.
• Sterile equipments & standard devices for delivery of the newborn.</td></tr>
<tr><td>PMSMA : Pradhan Mantri Surakshit Matritva Abhiyaan</td><td>• Free ANC clinic on the 9th of every month.
• Screened for diseases and colour coded :
  • Green Sticker : No risk factor detected.
  • Red Sticker : High risk pregnancy.
  • Blue : Pregnancy Induced Hypertension.
  • Yellow : Co-morbid conditions.</td></tr>
</table>

Active space

PMMVY : Prime minister Matru Vandana Yojna	Cash incentive to pregnant female in installments (Rs. 5000). 1st installment : 1st ANC done. (Rs. 1000). 2nd installment : Institutional delivery. (Rs. 2000). 3rd installment : Baby completes the 6 weeks vaccinations - first dose vaccination (Rs. 2000).
MAA : Mothers' Absolute Affection	• Promote breastfeeding practices in India (At least 6 wks). • Supplementary nutrition to mothers.
LMC : Lactational Management Centers	• Most peripheral centres. • To promote breast milk donation & address proper storage & handling of breast milk.
SUMAN : Surakshit Matritva Aashwasan	• Service guarantee scheme (Good quality). • Free ANC, delivery & post-natal care. • Free treatment for sick new neonates. • Free transport and zero expense delivery. • No tolerance to denial. • Will ensure respectful care with privacy and dignity, with early initiation & support for breastfeeding, zero dose vaccination & zero expense services for sick newborns and neonates.
RBSK : Rashtriya Bal Swasthya Karyakram	• "Bal" : Child 0 -18 years. • Screening of 32 diseases (4Ds) : 1. Deficiency (5). 2. Diseases (6 + 2). 3. Defects (9). 4. Delays (10). • 2 new diseases added : TB & leprosy. • 5 Deficiencies : Vit A, Vit D, iodine & anemia, malnutrition.
RKSK : Rashtriya Kishor Swasthya Karyakram	• "Kishor" : Adolescent boys & girls (10-19 years). • AFHC (Adolescent Friendly Health Clinic). • WIFS (Weekly Iron Folic Acid Supplements). • Menstrual hygiene. • Peer educator initiative : "Saathiya approach".
Anemia Mukt Bharat (AMB)	• 6X6X6 initiative : 6 beneficiaries, 6 interventions, 6 institutional mechanisms. • Superseded National Iron Prophylaxis Initiative (NIPI) program.

----- Active space -----

Anemia Mukt Bharat (AMB) :

The 6 interventions :

1. Prophylactic Iron + Folic Acid supplementation.
2. Deworming with albendazole.
3. Intensified year-round Behaviour Change Communication Campaign (Solid Body, Smart mind).
4. Testing of anemia using digital methods & point of care treatment.
5. Mandatory provision of Iron & Folic Acid fortified foods (Twin fortified salts : 40 mcg of iodine + 1 mg of iron).
6. Addressing non-nutritional causes of anemia (malaria, haemoglobinopathies & fluorosis).

The 6 beneficiaries :

1. 6-59 months children.
2. 5 to 9 years school age children.
3. 10-19 years Adolescents.
4. 20-49 year reproductive females.
5. Pregnant female.
6. Lactating female.

LaQshya

Pradhan Mantri Surakshit Matritva Abhiyaan

Prime minister Matru Vandana Yojna

Mothers' Absolute Affection

Surakshit Matritva Aashwashan

Rashtriya Kishor Swasthya Karyakram

Iron Folic Acid Supplementation :

00:53:27

Age group	Iron Dose (mg)	FA Dose (mcg)	Timing	Color	Remarks
5-59 months	20	100	Bi-weekly	-	Liquid bottle, Auto dispenser.
5-9 years	45	400	Weekly	Pink	Sugar coated.

10-19 years (girls & boys)	60	500	Weekly	Blue	Sugar coated (Same dose as Red tablet).
WRA (20-49 years)	60	500	Weekly	Red	• Sugar coated. • Under Mission Parivar Vikas.
Pregnants & Lactating mothers	60	500	Daily	Red	Sugar coated. Given from 4th month of pregnancy till 6 months in lactation.

Classification of anemia under AMB :

- Pregnant females :
  - Mild : 10-11 g %
  - Moderate : 7-10 g%
  - Severe : < 7 g%
- Men : < 13 g%
- Female : < 12 g%

Treatment of Anemia in pregnancy :

Mild to moderate anemia (Hb > 7 g/dL) :

- <34 weeks POG + tolerant to IFA : 2 tablets of IFA.
- <34 weeks POG + not tolerant to IFA : IV iron sucrose or IV ferric carboxy maltose.
- >34 weeks POG : IV iron sucrose or IV ferric carboxy maltose.

Severe anemia :

- Hb 5 to 6.9 g/dL (Severe) :
  - 1st/2nd trimester : IV iron sucrose or IV ferric carboxy maltose.
  - 3rd Trimester : Hospitalisation & IV infusion ± blood transfusion.
- Hb < 5 g/dL (Very severe, any trimester) : Hospitalisation & IV infusion ± blood transfusion.

Note :

- Inj. Ferric carboxy maltose, is not given as i/m.
- Thalassemia major cases : Rx with folic acid.

Kits in health centres

01:00:26

- Kit A : Drug Kit A.
- Kit B : Drug Kit B.
- Kit C : Mid wifery Kit.

(Kits A, B, C) → Sub-center

- Kit D : PHC Equipment Kit. → PHC
- Kit G : IUD insertion Kit.
- Kit E to P → CHC/district hospital.

----- Active space -----

COMMUNITY MEDICINE REVISION 6

Malnutrition indicators & Nutritional rehabilitation 00:01:08

Malnutrition Indicators :

- Weight for Age (WFA) : Most sensitive marker for general malnutrition and combined acute-chronic malnutrition.
- Weight for Height (WFH) : Marker for acute malnutrition i.e wasting.
- Height for Age (HFA) : Marker for chronic malnutrition i.e stunting.
- Mid-upper arm circumference (MUAC) : Most sensitive marker for malnutrition independent of age.

Malnutrition Classifications :

1. Gomez classification : If WFA <80% range → Positive for malnutrition → Use waterlow's classification.

2. Waterlow's classification :

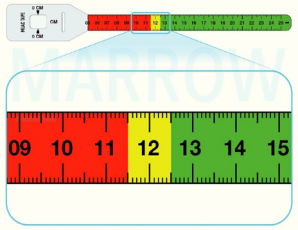
- Acute malnutrition : WFH < -2SD.
- Chronic malnutrition : HFA < -2SD.
- Combined malnutrition : Both WFH & HFA are low.

3. Welcome trust Classification : Used in patients with edema (Kwashiorkor).

Instruments for measurement :

1. Shakir's tape :

Colour	MUAC	Interpretation
Red	< 11.5 cm	Severe malnutrition
Yellow	11.5 – 12.5 cm	Mild to moderate malnutrition
Green	12.5 cm onwards	Normal



Mid upper arm circumference (MUAC) tape

2. Salter's weighting scale :

- Used for children < 2 years.
- Sensitivity : 100g.
- Used for monthly measurements in anganwadis as per ICDS program.

Active space

Severe Acute Malnutrition (SAM) :

Defined by the WHO as any of the following in children of ages 6 to 59 months.

- Weight for length/height below -3 SD
- Mid-upper arm circumference (MUAC) < 11.5 cm.
- Presence of B/L pitting pedal edema.

Management of SAM/Nutritional Rehabilitation :

Referred to Nutritional Rehabilitation Centers (At CHCs).

Phase	Dietary Intervention
Stabilization phase (1-2 days)	Starter Diet (F-75) : 75 Kcal and 0.9 g of protein per 100ml of food. Iron is C/I in starter diet.
Transition phase (2-3 days)	Catch up Diet (F-100) : 100 Kcal and 2.9 g of protein per 100ml of food + micronutrients.
Rehabilitation phase (Appetite recovered : Child finishes >90% of given meal)	Home based balanced diet.

Growth Charts

00:17:15

Used by anganwadis for ICDS growth charting (Separate for boys and girls).

Used to track monthly WFA measurements atleast until the age of 3 years.

Used for 'Trend of growth' over atleast a 2-3 months period :

- Rising : Good growth.
- Flat : Dangerous.
- Falling : Very dangerous

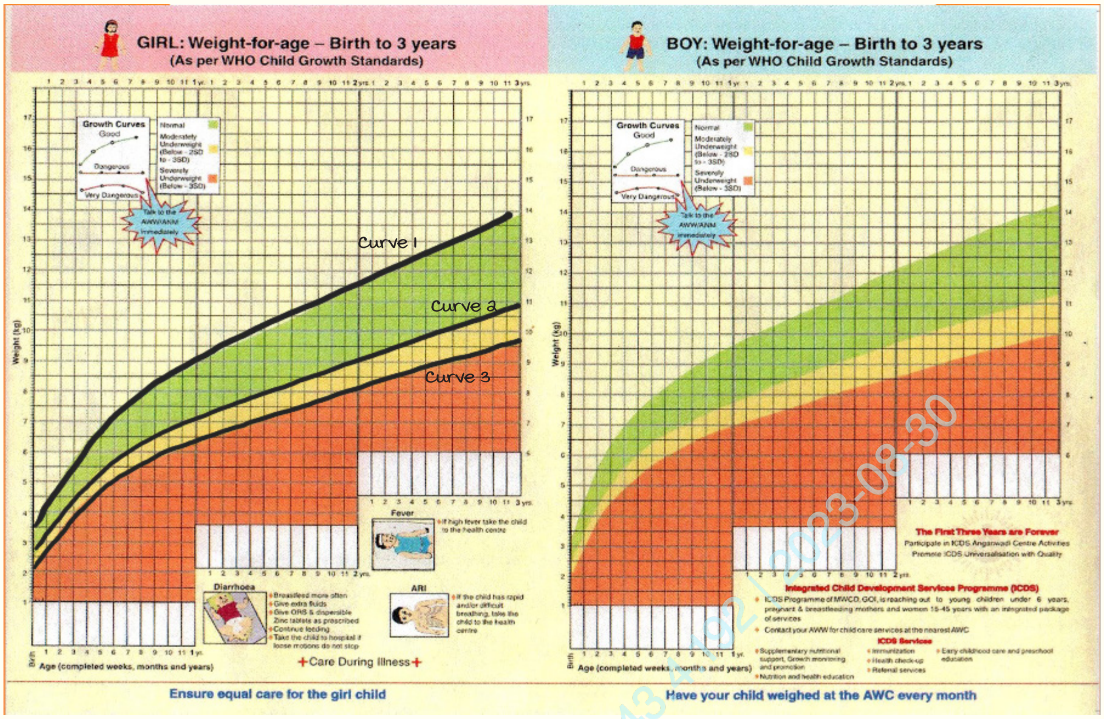
It has 3 curves :

- Curve 1 : +2 SD/97th percentile.
- Curve 2 : -2 SD
- Curve 3 : - 3 SD

It has 3 zones :

- Green zone : Between +2 SD to -2 SD → Normal nutrition.
- Yellow zone : Between -2 SD to -3 SD → Mild to moderate malnutrition.
- Red zone : Below 3rd curve → Severe malnutrition.

----- Active space -----



Child Survival Initiatives

00:21:45

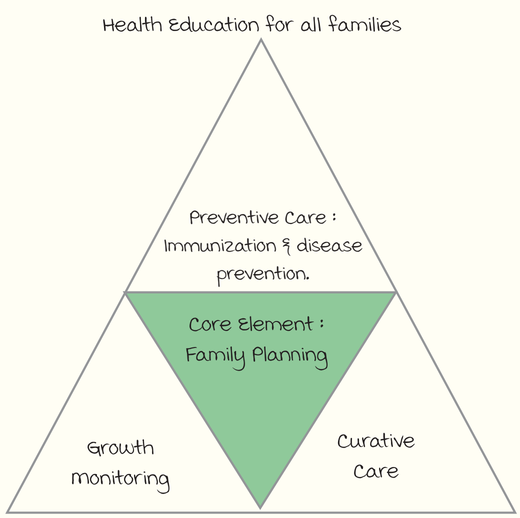
Kangaroo mother care :

5 components :

- S : Skin to skin contact (Prevention of hypothermia).
- A : Airway disease (Pneumonia) prevention.
- A : Ambulatory support.
- N : Nutritional support i.e Exclusive breast feeding for 6 months.
- S : Support (Emotional).

Under 5 clinics :

Has 5 elements



Active space

GOBI FFF : By UNICEF

- G : Growth Monitoring.
- O : Oral rehydration solution.
- B : Breast feeding.
- I : Immunization.
- F : Female fertility.
- F : Female literacy.
- F : Female nutrition.

Other initiatives :

Initiative	Details
Baby Friendly Hospital Initiative (BFHI)	• Good breastfeeding. • Early Rooming in. • Launched by the UN.
Mothers' Absolute Affection (MAA) (Indian version of BFHI)	Promote breast feeding. • within 1 hour of normal vaginal delivery. • within 4 hours of cesarean section.
Comprehensive Lactational Management Centers (CLMC)	To promote breast milk donation
World Immunization Week	Last week of April
World Breastfeeding Day/Week	1st – 7th August

SAANS Protocol

00:27:00

Social Awareness and Actions to Neutralize Pneumonia Successfully protocol
For health workers in the field (Children b/w 2-59 months of age).

Classification	Signs as per IMNCI	Signs as per SAANS
No pneumonia/Cough/Cold	No signs of severe pneumonia or pneumonia.	
Pneumonia	Fast breathing or Chest indrawing	Fast breathing
Severe pneumonia/Very severe disease	General danger signs : • Not able to drink. • Persistent vomiting. • Convulsions. • Lethargic/unconscious. • Stridor. • Severe malnutrition.	General danger signs or Chest indrawing

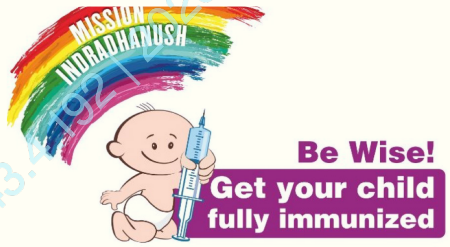
----- Active space -----

Summary management algorithm :

	ASHA	ANM	CHO	Medical Officer (MO)
No pneumonia/ Cough/Cold	Home-based care			
Pneumonia	Refer after pre-referral dose of oral amoxicillin.	Treat with oral amoxicillin and home-based care		
Severe pneumonia/ Very severe disease		Refer after pre-referral dose of oral amoxicillin and IM gentamycin.		Hospitalize and treat as per IMNCI guidelines

Mission Indradhanush (NIS)

00:33:15



National Immunization Schedule (NIS).

7 visits until 5 years of age.

Recent Updates :

- Rotavirus vaccine brought under open vial policy.
- JE changed to Killed vaccine.

Vaccination schedule

Age	Vaccination schedule
At birth	BCG, OPV-0 dose, Hep B-birth dose
6 weeks	OPV-1, Rota-1, Pentavalent-1, fIPV-1, PCV-1
10 weeks	OPV-2, Rota-2, Pentavalent-2,
14 weeks	OPV-3, Rota-3, Pentavalent-3, fIPV-2, PCV-2
9 months	measles/MR-1, Vit A, PCV booster, fIPV-3, JE-1
16-24 months	measles/MR-2, DPT 1st booster, OPV booster, JE-2
5-6 years	DPT 2nd booster
10 & 16 years	Td
For pregnant woman	Td-1 : Early in pregnancy. Td-2 : 4 weeks after Td-1. Td booster : If pregnancy occurs within 3 years of last pregnancy and 2 Td doses were received.

Pentavalent vaccine : DPT + HiB + Hep B.

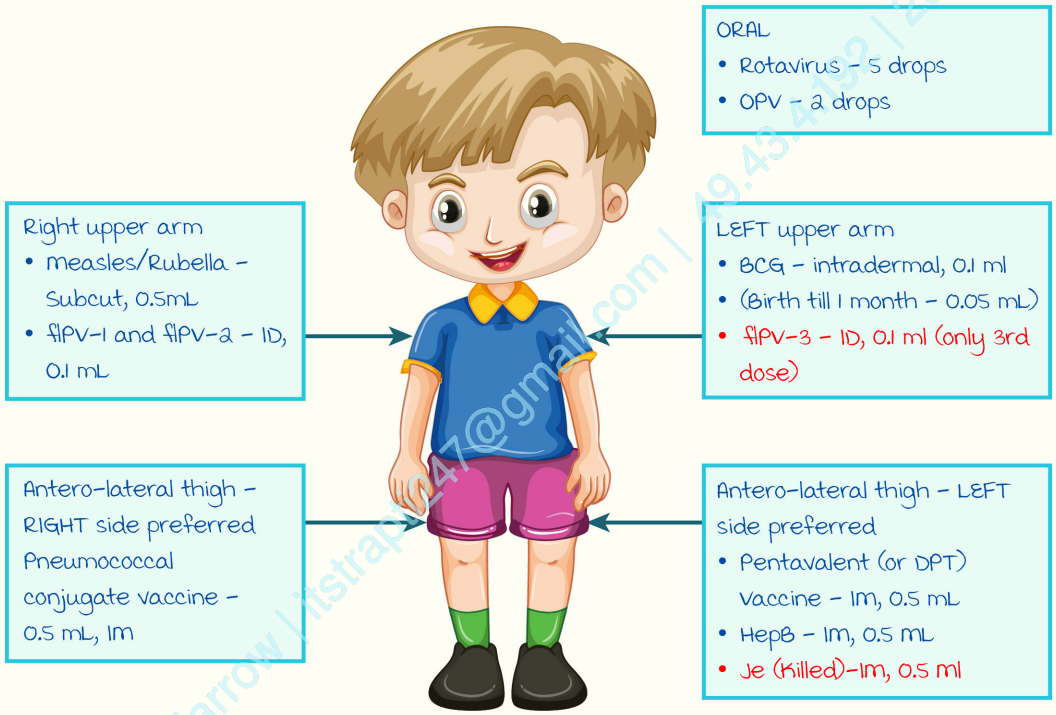
12 diseases under this program :

- Nationally : DPT, Polio, M R, severe TB, Rotavirus, HepB, HiB & PCV.
- 1 sub nationally : JE (Only in endemic districts)

Active space

upper age limit of the vaccines :

Vaccine	Upper age limit
Hep B birth dose	Within 24 hours
OPV Zero dose	Within 15 days.
BCG, Rotavirus, Pentavalent, IPV	Until 1 year of age.
OPV/measles/MR	Up to 5 years.
DPT	Up to 7 years
JE	Up to 15 years.



Some side effects of vaccines :

Vaccine	Side effect
Pertussis component of DPT, Pentavalent	Inconsolable cry Neurological deficits
Rotavirus	Intussusception
OPV	Vaccine associated paralytic polio
BCG	Lymphadenitis
measles/rubella	measles like illness
JE, PCV	No side effects

----- Active space -----

Sequence of vaccine administration (if on same day) :
Oral (OPV, Rotavirus) → Injectables (ID → SC → IM).
Pentavalent administered at the end d/t side effect of inconsolable cry.

Vaccine storage considerations

00:40:30

Ice lined refrigerators (ILR) :

Optimum storage temperature : 2-8°C.
Coolest area will be the lower most area.
Freeze sensitive vaccines should be kept at the top and heat sensitive vaccines (OPV, measles, JE, BCG) at the bottom.

Heat sensitive live and killed vaccines :

Heat sensitive (Top→Bottom order in ILR)	Live Vaccines	Killed Vaccines
Don't Hit people In This Room Because Japanese Manners Outshine	Cool Boys Love CRIME Types	P3 Killed In Clod Rabbit Jelly
Diluents Hep B Pentavalent, PCV IPV Td, TT Rotavirus BCG JE Measles, Rubella OPV	COVID (viral vector) BCG Live Chicken pox Rubella Influenza measles, mumps JE Typhoid oral (Tyai)	Plague Polio Pertussis Killed KFD Influenza Covid (Covaxin) Rabies JE

Freeze sensitive vaccines : Hep B > Pentavalent vaccines (DPT, TT, Td) > PCV.
Heat sensitive vaccines : OPV > Measles > BCG.
IPV is both freeze & heat sensitive.

Vaccine vial monitor (VVM) :

- Used for heat sensitive vaccines.
- VVM contains heat sensitive chemicals.

Discard point

Active space

Open vial policy :

The vaccine can be kept in a health center for 28 days with temperature maintenance.

If the vaccine is under open vial policy then VVM will be on the body (Not on cap/neck).

Open vial policy does not apply to :

- Measles/Rubella vaccine (Use within 6 -8 hours).
- BCG (Use within 4 - 6 hours).
- Covid 19 (Use within 8 hours).

Not to be used :

- Opened vials of BCG, MR & JE.
- Expired vaccines.
- VVM is not in usable stage.
- Date & time of opening is not mentioned.
- 28 days of opening of vial has passed.

Shake Test :

Used for freeze sensitive vaccines : DPT, Hep B, pentavalent, PCV.

Aluminum hydroxide in DPT will precipitate if frozen.

Shake the vial along with freeze damaged control vial :

- Freeze damaged vial : Clear liquid with white precipitate.
- Undamaged vial : cloudy white liquid.

Note : Miscellaneous Health programs

- SUMAN scheme : Service guarantee to all pregnant women and newborns.
- Jai Vigyan Mission : To understand streptococcal infection and rheumatic fever.
- MusQan : To provide quality, child friendly services upto 12yrs.
- PM Matru Vandana Yojana (PMMVY) : Centrally sponsored scheme with cash incentive of Rs 5000/- for 3 installments of early registration of pregnancy, ANC and institutional delivery & birth registration and first dose vaccines received.

----- Active space -----

COMMUNITY MEDICINE REVISION 7

Demographic Determinants 00:01:20

Demographic processes :

1. Births
2. Deaths
3. Migrations
4. Marriages
5. Social mobility (within socio-economic status)

Dependency ratio = $\frac{\text{No. of dependent people (<14 years \& >65 years)}}{\text{No. of independent people (15-64 years)}} \times 100$

Dependency ratio of India : 48.73

Statistics :

Population statistics : Population size, sex ratio, population density & dependency ratio.

Vital statistics : Birth rate, death rate, natural growth rate, life expectancy at birth, mortality rate & fertility rates.

Sex ratio :

Number of females for every 1000 males.

Sex ratio of India : 1020 females for every 1000 males (NFHS 5 : 2019-20).

Sex ratio at birth : 936 (SRS 2021-2022).

Annual Growth Rate & Demographic Stages 00:06:18

Annual growth rate :

Annual growth rate (AGR) = (BR-DR)/10.

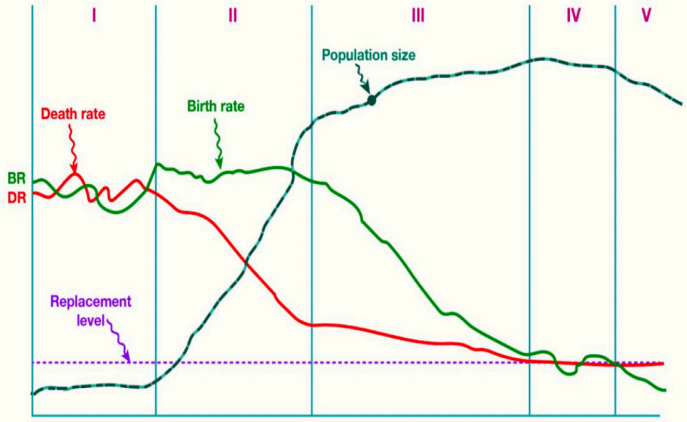
AGR for India : 0.9 (2021).

Malthusian growth model :

Annual growth rate	Doubling time
0.5 %	140 years
1 %	70 years
1.5 %	~ 50 years
2 %	35 years

AGR > 2 % : Explosive growing population

Demographic stages/Phases :



Stage	Birth rate	Death rate	Demographic gap	Countries
1 (High stationary)	High	High	-	Few-very underdeveloped countries
2 (Early expanding)	High	Declining	Increase (maximum)	Most of developing/ Underdeveloping countries
3 (Late expanding)	Declining	Slow, declining	Starts declining	India, China
4 (Low stationary)	Low/slow declining	Low/slow declining	Low stable/ declining	Most of developed countries
5 (Declining)	Slow declining	Low stable	Lowest, Minimum	BR< DR Japan, Greece, Norway

Fertility Indicators

00:15:03

1. General fertility rate (GFR)
2. Total fertility rate (TFR)
3. Gross reproduction rate (GRR)
4. Net reproduction rate (NRR)

----- Active space -----

	Total number of	A female will bear during her	Assuming/adjusting for the
GFR	Children	Reproductive years	-----
TFR	Children	Reproductive years	Age specific fertility rate
GRR	Daughters	Reproductive years	Age specific fertility rate

NRR : Total number of daughters which a newborn girl child will bear during her entire life, assuming the age specific fertility rates and age specific death rates. It is the best indicator to evaluate National Family Planning Program.

Complete family size best given by TFR.
most refined indicator : NRR.
Targets :

- NRR should be 1 (Replacement level, country level indicator).
- TFR < 2.1 to obtain NRR = 1 (State level-operational/epidemiological indicator).
- CPR (Couple protection rate) > 60% to achieve the above two (Field level/ grass root/operational indicator).

Survey Systems in India

00:27:23

Sample Registration System (SRS)/Dual registration system :

- Done at state & national levels.
- Data taken 6 monthly, reporting done annually.
- Uses : MCH indicators → MMR (maternal mortality ratio), IMR (Infant mortality rates), CBR (Crude birth rate) & CDR (Crude death rate).
- Vital registration system.

National Family Health Survery (NFHS) :

- Recently done : NFHS-5, 2019-20.
- Uses : Variables of health (Literacy rate, immunization rates, prevalence of diseases, contraceptive use, family planning methods etc).
- NFHS-5 important values :
  - Literacy rate (men, women) : 84.4%, 71.5%
  - TFR : 2.0
  - Any method of contraception : 66.7%
  - Fully vaccinated child (12-23 months old) : 76.4%
  - Underweight for age (<5 years) : 32.1 %

Fully immunized child : Taken all vaccinations till 1 yr of age
Completely immunized child : Taken all vaccinations till 2 yrs of age

Active space

Census :

Done every 10 years, conducted by the Ministry of Home Affairs.

Use : Population statistics.

Civil registration system :

Uses : Birth & death registration (within 21 days).

Note :

1. According to 2021 census, m/c cause of death among any age group : Cardiovascular diseases.
2. m/c cause of infant mortality :
   - If nothing is mentioned → According to SRS : LBW, prematurity.
   - According to MCCD : Hypoxia, birth asphyxia.

Family Planning

00:34:30

Eligible couple :

- Couple in which female is in the reproductive age group (15–49 years).
- Target for contraception.

Target couple :

- Couple who has completed family & has alteast one live child.
- Target for permanent methods of sterilization.

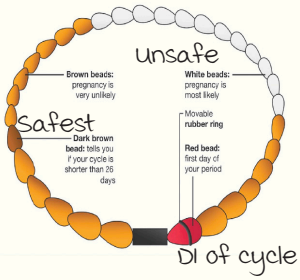
National family planning program

Methods of family planning :

1. Natural methods in relation to menstruation/physiology :

Natural method	Salient points
Lactational amenorrhea	• Physiological response • Contraception of choice during this period : Progesterone only pills
Rhythm method	• Calendar method based on safe period approach
Basal body temperature method	• 0.3–0.5°C rise in body temperature at the time of ovulation (Used more to know about fertility)
Billing's method	• Based on cervical mucus changes • Cervical mucus is thin and copious during ovulation
Symptothermal method	• Basal body temperature method + Billing's method (Any natural method)

----- Active space -----

Natural method	Salient points
String of beads 	Advantages : Useful for illiterate couple and those living in rural areas Disadvantage : Unreliable if female has shorter/longer menstrual cycles

2. Barrier methods :

Male condom : Made of latex.

Female condom : FC 1 (made of polyurethane), FC 2 (made of latex, m/c in India) & FC 3.

Female condom Male condom

- Efficacy in preventing pregnancy (or) efficacy in preventing STD/reproductive tract infection : male = female condoms.
- Easy to use : Male condoms.
- More side effects : Female condoms (If stayed inside the vagina).

3. Intrauterine devices :

- 1st generation (Inert) : Lippe's loop, Graffenberg ring.
- 2nd generation : Copper containing (Copper T-200,380,375) (Cu 375- multiload device), CuT-380 & Cu 375 are used in govt setups.
- 3rd generation : Hormonal → Mirena, Progestasert.

	CuT-380A	Cu 375 device
Shape of device	T shaped	Inverted U shaped
Life span	10 years	3-5 years (5 > 3)
Copper present	On the arms as well	Only on the stem
Insertion	Difficult, A/w bleeding, ↑ chances of expulsion	Easy, better attachment
Thread	Polyethylene	Monofilament nylon (user friendly)
Plunger rod	Needed for insertion	Not needed for insertion
Image		

Active space

Hormonal IUDs :

	Progestasert	Mirena
Contains	Natural progestin	Levonorgestrel/LNG-20
Life span	1 year	5 years
Total hormone load	38 mg	52 mg
Secretes at a rate of	65 mcg/day	20 mcg/day
Characteristic	• Strong a/w ecoptic pregnancy • Lowest expulsion rate	Lowest failure rate (0.3/100 women years)

Mode of action of IUD devices :

Inhibits fertilization > inhibits implantation.

Time of insertion :

Intra caesarean	During C/S
Post plancental	Within 10 min of delivery
Post partum	After 10 min and within 48 hrs after delivery
Interval	After 6 weeks of delivery
Post surgical abortion	After 12-15 days
Non pregnant female	Within 1st 10 days of start of menses

Absolute contraindications of IUD :

- Suspected pregnancy.
- Pelvic inflammatory disease.
- Vaginal bleeding of undiagnosed etiology.
- Gynecological cancers.

m/C side effect : Bleeding.

Note : Ectopic pregnancy is not a contraindication for IUD insertion (Copper containing device can be safely used).

4. Oral contraceptive pills :

- MALA-D : Social marketing scheme (Asha-home delivery + minimal charges).
- MALA-N : Free of cost.
- Composition of OCPs :
- Ethinylestradiol 0.03 mg.
- Levonorgestrel 0.15 mg.
- Pack = 21 hormonal tablets + 7 ferrous fumarate tablets.

----- Active space -----

Side effects of OCPs :

- Metabolic : ↑ body weight, dyslipidemias, headaches (migraines).
- Cardiovascular : Thromboembolism, coronary artery disease, stroke, HTN.
- Malignancy : Breast cancer, cervical cancer, hepatocellular adenoma.
- Gall bladder diseases.

5. Injectables and implants :

i. Depot medroxyprogesterone Acetate (DMPA) (Antara injections) :

- Contains 150 mg of DMPA.
- I/M route, once in 3 months.
- Can be given in breastfeeding women.
- S/E : Heavy bleeding.

ii. Norethisterone enanthate (NET-EN) :

- Contains 200 mg of progesterone.
- I/M route, once in 2 months.

iii. Implants :

- Norplant : Silastic rods.
- Nexplanon (Newer version of implanon) : Self injection, has the lowest rate of failure among all contraceptives (most effective : Nexplanon > implanon).

6. Centchroman (Chhaya tablets/Saheli) :

- Contains Ormeloxifene.
- Dose : 30 mg weekly oral pill.
- MOA : Selective Estrogen Receptor Modulator.
- S/E : ↑ weight gain, ↑ bleeding, high failure rate (D/t compliance issues).

7. LNG pill (Ezy pill) :

- Emergency contraceptive.
- Single tablet of 1.5 mg LNG taken within 72 hours of unprotected sexual intercourse.

Permanent methods of contraception/Sterilization : 01:00:13

1. Tubectomy :

m/c operative technique : Modified Pomeroy's technique.

Adopted more than vasectomy.

m/c sterilization method overall.

Active space

2. Vasectomy :

m/c operative technique : Non scalpel vasectomy.

More cost effective.

Complications of vasectomy :

- Operative/psychological.
- Sperm granules : Self limiting, painless, appear 10-14 days in post operative period.
- Spontaneous recanalization : < 0.4% of total vasectomies → Failure.
- Autoimmune response (Anti sperm antibodies) → If recanalization is attempted, chances of return of fertility are less, no health effects.

IUCD : Within 48 hrs or after 6 weeks of delivery.

Female sterilization : Within 1 week or after 6 weeks.

Emergency contraceptive pills : Only after 4 weeks of delivery.

Contraceptives of choice (C°OC) : Younger age : OCP, Higher age : IUD

Scenario	C°OC
Unmarried, sexually active female	• OCP + Barrier method
Newly married couple, no children	• OCP
Married couple, one child, want to delay 2nd child	• Intrauterine device
Breast feeding female	• POP/Chhaya : Anytime after delivery • Antara injection can be given after 6 weeks of delivery • OCP can be given after 6 months of delivery
Non lactating female	• POP/Antara/Chhaya : Anytime after delivery • OCP : After 3 weeks of delivery

----- Active space -----

Recent updates & advances in National Family planning program : 01:07:10

ASHA incentives :

- Delay of 1st child till two till years after marriage : INR 500.
- Gap of at least 3 years between the 1st & 2nd child : INR 500.
- Adoption of permanent family planning method after 2nd child : INR 1000.

Home delivery :

- Condoms (3 in one packet) : 1 rupee charged per packet.
- OCPs : Full month schedule.

Fixed day approach for permanent methods of sterilization :

- PHC : Monthly.
- CHC : Fortnightly.
- Sub district hospitals : Weekly.
- District hospital : Twice weekly.

Urine pregnancy testing kit : Nishchay.

Failure rates of contraception : 01:09:28

Two methods :

Life table analysis (Best, but difficult to do).

Pearl's Index (m/c).

$$\text{Pearl's index} = \frac{\text{No. of accidental pregnancies}}{\text{Total women years of exposure}} \times 100$$

$$= \frac{\text{No. of accidental pregnancies}}{\text{Total women months of exposure}} \times 1200$$

Pearl's index is expressed as per hundred women years (HWY).

Vaccines calculation :

Number of vaccines = Eligible beneficiaries (Live births) x Number of doses x Vaccine multiplicative factor.

- Live births = CBR x population/1000.
- Vaccine multiplicative factor = Wastage factors of the vaccine.
  - Wastage factor for BCG = 2
  - Wastage factor for measles, rotavirus, JE = 1.3
  - Wastage factor for all other vaccines = 1.1

COMMUNITY MEDICINE REVISION 8

Communicable Diseases

00:00:46

Chicken pox :

Varicella zoster virus from herpes virus group.

Primary infection : Children (m/c) affected (Peak age : < 10 years).

Herpes zoster : Reactivation of latent infection/ secondary infection by varicella zoster.

Cyclic trend of 2-5 years.

Incubation period : 14-16 days.

Mode of transmission : airborne > droplet transmission.

Period of communicability :

- 1-2 days before the onset of rash.
- Extends till 4-5 days after the onset of rash.

Clinical features :

- Fever with rash.
- Pleomorphic, vesicular rash starts from trunk area and extends to the face and limbs.
- After 3-4 days, scab formation occurs (scab : non infective).
- Isolation period : Till the scabs are formed.
- Secondary attack rate : 80-90 %.
- Case fatality rate (CFR) : < 1 %.

m/C complication (neonates, immunocompromised) : Pneumonia.

Maternal varicella : Vertical transmission of infection to fetus, causes congenital varicella syndrome.

The features of congenital varicella syndrome include :

- Microcephaly.
- Microphthalmia.
- Low birth weight.
- Atrophy of limbs.
- Deafness.

----- Active space -----

Chicken pox vaccine :

- Monovalent live attenuated vaccine.
- OKA strain.
- 0.5 ml subcutaneous (s.c) route at 12-18 months of age.
- Duration : 10 years.

Post exposure prophylaxis :

VZIG given to :

- Pregnant female with varicella zoster infection.
- Neonate born to a female who has developed varicella infection within 5 days of delivery.
- Immunocompromised children.

Varicella zoster immunoglobulin (VZIG) is given at a dose of 12.5 IU/Kg within 72 hours of exposure & can be repeated after 3 weeks.

VZIG and varicella vaccine should not be given together (as they are chemically not compatible together).

Varicella vaccine (If VZIG not available) can be given in immunocompetent patient who are > 1 year of age, but contraindicated in pregnant females.

Measles

00:08:58

RNA paramyxovirus.

Incubation period : 10-14 days (7 - 20 days range).

Tranmission mode : air borne > droplet.

Age affected : 6 months - 3 years.

Clinical features :

Fever with maculopapular rash which begins from behind the ear/face and spreads downwards to extremities.

- Isolation period : Till 7 days from the start of illnesss.
- Secondary attack rate : 85%.
- m/c associated feature : Diarrhea.
- m/c complication : Otitis media.
- m/c complication leading to death : Pneumonia.

Prevention of measles :

Measles vaccine :

- Dose : 0.5 ml, given by SC route (MR : Given along with rubella).
- Live attenuated vaccine.
- Strain used : Edmonston Zagreb strain.
- Reconstituted with distilled water, should be used within 4-6 hrs.
- Does not follow open vial policy.
- Stabilizer for vaccine : Sorbitol, Gelatin.
- Antibiotics added : Erythromycin, Neomycin.

The vaccine is given in two doses :

- 1st dose (MR 1) : 9 months.
- 2nd dose (MR 2) : 16-24 months.
- Given in the right upper arm on the posterior aspect of the triceps.

MCV-0 dose (measles containing vaccine-extra dose) :

- Given to child around 6-9 months of age.
- Is not a substitute to MCV-1 dose.
- During measles outbreak.
- During campaigns in setting where the risk of measles among infants <9 months of age remain high :
    a. Regular outbreaks.
    b. Conflict zones, refugee camps.
    c. Known contacts of measles cases in day care centres.
    d. For infants known to be HIV infected or exposed (i.e. born to an HIV +ve mother).

Measles immunoglubulin :

Within 3-4 days of measles exposure for :

- Pregnant women.
- Immunocompromised.
- Infants of age < 6 months.

Within 4-6 days of measles exposure for :

- Severely immunocompromised.
- < 1 year of age.

----- Active space -----

Rubella

00:17:34

Also known as German measles/3-day illness.
Belongs to Rubiviridae family.

Peak ages affected :

- 3-10 years in developing countries.
- > 15 years in developed countries.

50-60 % of cases are subclinical → Shows iceberg phenomenon.
Incubation period : 2-3 weeks.
Period of communicability : 7 days before and 7 days after the onset of rash.
Trend of infection : Cyclic + seasonal trend.

Clinical features :

- Fever with rash (Small, morbiliform).
- Low fatality, self limiting disease.
- Rubella infection in pregnancy : Congenital rubella syndrome (CRS) → Triad of patent ductus arteriosis (most consistent with CRS) + sensori-neural hearing loss + cataract.

Prevention of rubella :

- Live attenuated vaccine : Winstar Ra 27/3.
- Dose : 0.5 ml, s.c route, given with measles vaccine as MR.
- Given at 9 months and 16-24 months.
- Vaccine is C/I in pregnancy.
- Rubella immunoglobulin is available for only pregnant females with known exposure to rubella virus.

Rubella vaccination strategy in outbreaks :
Priority of vaccine (From high to low) :

1. Women in reproductive age group (20-25 y/o non pregnant females).
2. Adolescent females.
3. Infants and children.

mPOX

00:24:50

Active space

Epidemiology :

m-pox virus is a ds-DNA virus belonging to the variola virus family.

Two types of m-pox virus are known : Clade I and Clade II.

Infections in the current outbreak are from Clade II (more specific- Clade IIb).

Self limiting with < 1 % fatality rate.

The illness typically lasts 2-4 weeks.

more common in immunosuppressed patients.

Mode of transmission :

- Respiratory droplets, vertical transmission.
- Infected body fluids and secretions, direct touch and sexual intercourse.

Incubation period : 1-2 weeks.

Clinical features :

- Fever, myalgia, chills, respiratory symptoms (e.g. sore throat, congestion, cough).
- Definite feature : Lymphadenopathy.
- A rash that looks like pimples/blisters which appears on the face, inside the mouth, and on other parts of the body such as hands, feet or occasionally chest, genitals or anus (1-3 days after fever).
- The rash goes through different stages before healing completely.

Diphtheria

00:26:45

Caused by Corynebacterium diphtheriae, a gram positive, non motile and anaerobic bacteria.

Causes disease by release of exotoxin.

Incubation period : 2-6 days.

Clinical features :

- 95% of cases are asymptomatic.
- Only 5% are symptomatic (Shows iceberg phenomenon).
- Carriers could be healthy, incubatory or convalescent.
- Healthy carrier : Arise from a subclinical case or a non-virulent strain.

Period of communicability : 14-28 days from the onset of disease.

----- Active space -----

Isolation is based on culture reports and carried out till 2 negative culture reports 24 hours apart from the throat and nose are obtained.

Prevention and control of diphtheria

For cases :

Mx : Diphtheria anti-toxin (DAT) + Antibiotics x 14 days + Isolation.

Antitoxin dosing :

Diphtheria clinical presentation	DAT dose in IU
Pharyngeal/laryngeal disease of 2 days duration	20,000-40,000
Nasopharyngeal disease	40,000-60,000
Extensive disease of 3/more days duration, or any patient with diffuse swelling of the neck	80,000-100,000
Skin lesions only (rare case where treatment is indicated)	20,000-40,000

Antibiotics choice :

- DOC : Intramuscular procaine penicillin G.
- Parenteral or oral erythromycin.
- Oral penicillin V.

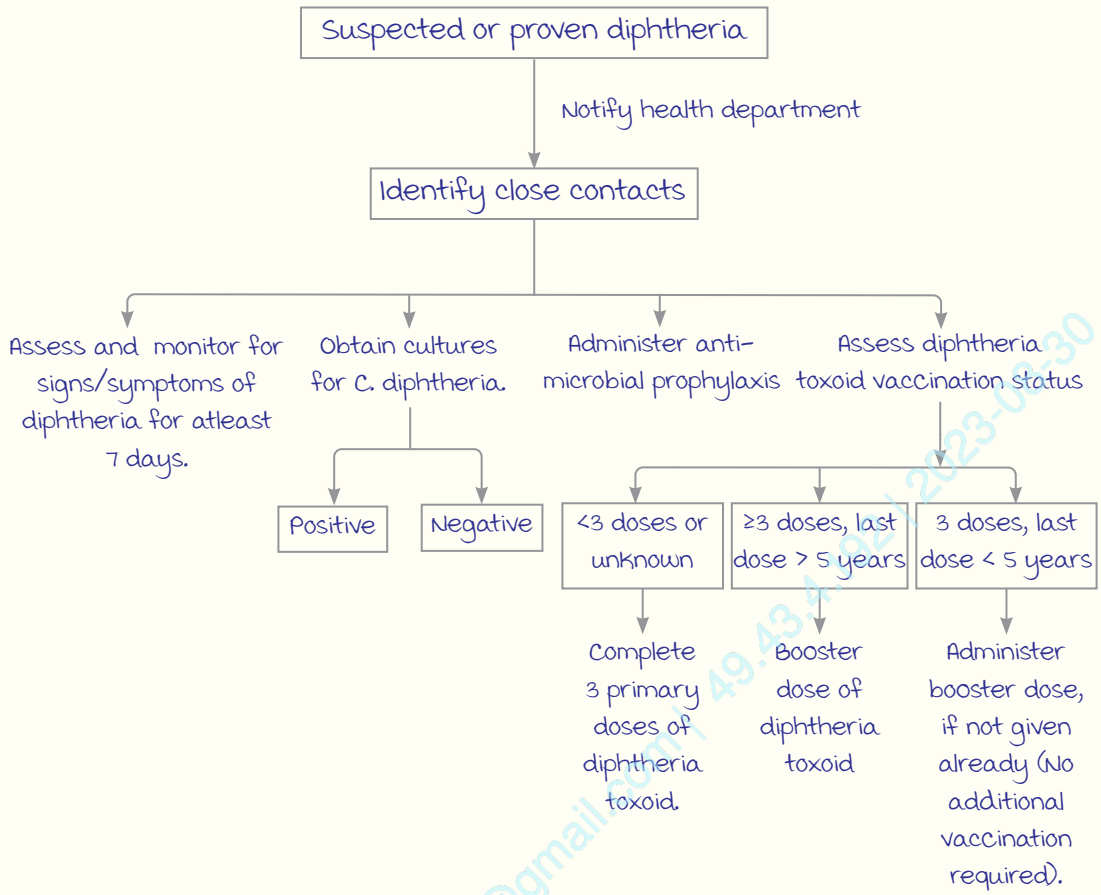
For carriers :

DOC : Oral erythromycin x 10 days.

For contacts :

- Culture for diphtheria :
  a. Culture positive : Treat as a case of diphtheria.
  b. Culture negative : Treat as a carrier of diphtheria.
- Antibiotics : DOC : Oral erythromycin.
- Assess the vaccination status.

Case management of suspected of proven diphtheria :



Acute Respiratory Illness

00:34:30

Guidelines :

SAANS (social awareness and actions to neutralize pneumonia succesfully) : guidelines- 2019 to 2023, for peripheral centers.

Note :

All mcqs on pneumonia related to guidelines- follow WHO, IMNCI guidelines unless the question mentions SAANS.

----- Active space -----

WHO-IMNCI guidelines

Revised classification and treatment for childhood pneumonia at health facility :

Child age 2-59 months with cough &/ or difficult breathing	Cough and cold	No pneumonia	Home care advice
	Fast breathing and/ or chest indrawing	Pneumonia	Oral amoxicillin and home care advice
	General danger signs	Severe pneumonia or very severe disease	First dose antibiotic and referral to facility for injectable antibiotic/ supportive therapy.

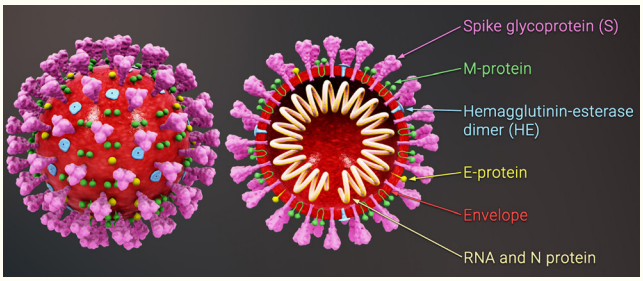
WHO Recommendations

Recommendations	Clinical features	Treatment (DOC)
1	Children with fast breathing pneumonia + no danger signs + no chest indrawing	Oral amoxicillin x 5 days
2	Children aged 2 to 59 months with chest indrawing pneumonia	
3	Children aged 2 to 59 months with severe pneumonia	IV ampicillin + IV gentamicin once a day for atleast 5 days. 2nd line : Ceftriaxone.
4 (For HIV infected)	HIV infected/exposed children < 5 years with chest indrawing pneumonia/severe pneumonia	Ampicillin + Gentamicin/ Ampicillin + ceftriaxone.
5 (for HIV infected/ exposed child with suspicion of P. Jiroveci)	Age 2 months to 1 year	Empiric cotrimoxazole given as additional treatment.
	Age > 1 year	Empiric cotrimoxazole is not recommended (d/t risk of developing drug resistance to penicillin/ ampicillin).

COVID-19

00:41:38

----- Active space -----

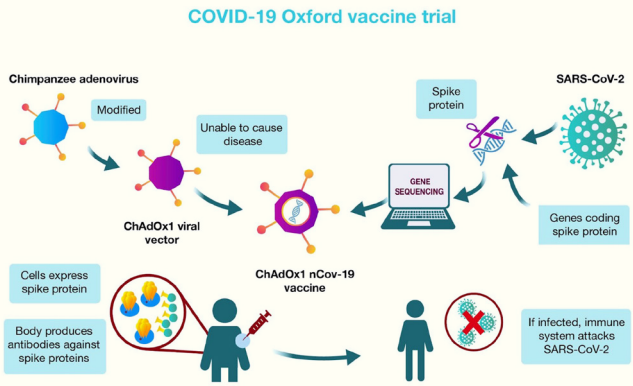


RNA virus from family of SARS (Severe Acute Respiratory Syndrome) virus.
Reservoir : Bats.
Intermediate host : Pangolin.
Variants : Alpha, Beta, Gamma, Delta & Omicron.

COVID-19 vaccines :

Viral vector vaccines	Killed vaccines	Protein subunit vaccine	mRNA vaccines
Covishield : Using CHAD-OX1 strain with chimpanzee adenovirus. Sputnik : Human adenovirus vaccine. Janssen by Johnson & Johnson. INCOVACC : BBV154 live nasal vaccine by Serum institute of India for age 2-18 years.	Covaxin : Using BBV-152 strain, Killed inactivated vaccine. Sinovac/CoronaVac : Inactivated COVID 19 vaccine.	Novavax : Subunit protein (spike protein) vaccine. Corbevax : BECOV2D recombinant protein subunit vaccine (version of receptor binding domain (RBD)) for children 12-14 yrs.	Pfizer. Moderna. mRNA packed into lipid nanoparticle & introduced into body.

General principle of Astrazenca/Covishield :
Chimpanzee adenovirus (CHAD-OX-1 strain) incorporated with mRNA coding for S (spike) proteins of COVID-19.



----- Active space -----

Zycov-D vaccine :

- DNA plasmid vector that carries the gene encoding the spike protein of SARS-CoV-2.
- Route : Intradermal injection using a spring-powered jet injector.
- In phase III trials, authorized for emergency use in India.

Biomedical waste management for COVID-19 :

Home level	All wastes	Yellow
Hospital level	Plastic, gloves	Red
	Glass	Blue
	Sharps	White
	Infectious & need incineration, microbiological wastes	Yellow

Hepatitis B

00:50:12

DNA virus.

Dane particle.

Reservoir : Humans.

Heat labile : Susceptible to 1-2% sodium hypochlorite.

Period of communicability : Till HBsAg is +ve.

Mode of transmission : Parenteral.

Clinical features : Jaundice with mild fever, clay colored stools.

HBsAg	Anti HBC	Anti HBs	Interpretation
Negative	Negative	Negative	Susceptible
Negative	Positive	Positive	Immune to natural infection
Negative	Negative	Positive	Vaccinated & immune
Positive	Total anti HBc (IgG +ve)- IgM anti HBc positive	Negative	Acute infection
Positive	Total anti HBc (IgG +ve)- IgM anti HBc negative	Negative	Chronic infection
Negative	Positive	Negative	• Resolved infection. • False +ve anti-HBc. • Low level chronicity.

Active space

Hepatitis B Vaccine :

- Contains recombinant HBsAg.
- Dose : 1 ml to all adults (20 mcg), 0.5 ml to children (10 mcg).
- Birth dose : 0.5 ml i.m (10 mcg), prevents perinatal transmission.
- Lifelong protection after vaccination.
- If patient missed subsequent dose, resume the schedule.
- Doses : 0, 1 and 6 months; given as i.m in the deltoid.
- Contraindication : Anaphylaxis to vaccine.
- Cold chain : +2° to +8°C (freeze sensitive).

Hepatitis B immunoglobulin (Ig) :

Given in accidental needle injuries.

- Should be given within 6 hours and not more than 48 hours.
- 0.05–0.07 ml/kg body weight in 2 doses with a gap of one month.
- Hepatitis B vaccine can be given combined with hep B Ig.
- Check HBsAg levels in the patient :
  a. Positive : No vaccine needed.
  b. Negative : Give vaccine.

Note : Ig along with vaccine can be given in :

1. Rabies.
2. Tetanus.
3. Hepatitis B.

WHO 5C's concept for prevention of Hepatitis B :

- Consent.
- Confidentiality.
- Correct test results.
- Counselling.
- Connection (to prevention, treatment and care services).

Cholera

00:58:40

Father of public health.
Marker for lack of social development.
Caused by Vibrio cholerae, a gram negative, comma shaped bacteria.

----- Active space -----

MC type of cholera in India :

- Serotype : O 1.
- Biotype : El Tor.
- Serogroup : Ogawa.

Force of infection : Tailing of an epidemic (difficult decline of a cholera outbreak) d/t contaminated water and high number of carrier stages.

Period of communicability :

Source	Period of communicability
Cases	7–10 days
Convalescent carriers	2–3 weeks
Chronic carriers	Weeks–months

Reservoir of infection : Humans.

Asymptomatic : Symptomatic cases = 3 : 1.

Transmission : water borne (vehicle borne).

Cholera outbreak mangement :

1. Verification of diagnosis.
2. Notification (outbreak needs to be notified to WHO and Government of India).
3. Early case finding.
4. Treatment : secondary care centers, rehydration, antibiotics.
5. Epidemiological investigation.
6. Sanitation, Health education.
7. No use of chemoprophylaxis, vaccination in cholera.

DOC for cholera : Doxycycline.

Other drugs : Tetracycline, fluoroquinolones.

Vaccines for cholera (for healthcare workers going to epidemic areas) :

	Dukoral	Shanchol, mORCVAX
Contains	Cholera 01	Cholera 01 & 0139 recombinant
B subunit	destroyed by gastric pH	No B subunit
Gastric buffer	requires buffer	does not require buffer
Age criteria	>2 years	>1 year
Dose schedule	2 doses, >7 days apart but within 6 weeks	2 doses within 14 days gap

Euvichol : same as Shanchol, but with better efficacy.

----- Active space -----

Note :

GPPD (Global plan for prevention and control of pneumonia and diarrhea Goals) for 2025 :

Parameter	Goal to be achieved
Reduce mortality from pneumonia in under 5 to	< 3/1000 Live births
Reduce mortality from diarrhoea in under 5 to	< 1/1000 Live births

Typhoid

01:08:25

Marker for sanitation.

Caused by Salmonella typhi, a gram negative flagellate.

Reservoir : Humans

Transmission : Feco-oral (predominant), urine.

Seasonal variation : July-September.

Ages affected : 5-19 years.

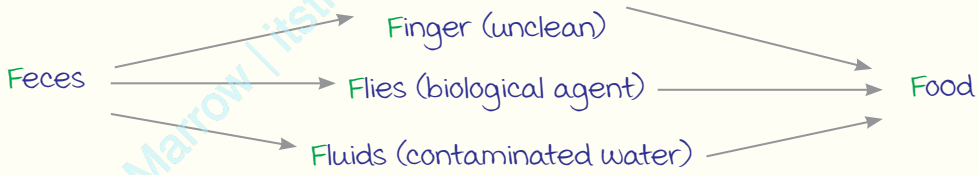
Gender commonly affected : M > F.

Carriers : F > M.

Gold standard IOC : Stool culture.

Widal test is a non specific and non sensitive test for typhoid.

5 F's in sanitation barrier :



Reservoir control :

- Early diagnosis.
- Notification and isolation (till 3 negative stool culture reports).
- Treatment : Fluoroquinolones (DOC), Cefixime.
  If fluoroquinolone resistant : Ceftriaxone/Azithromycin.
- Disinfection :
  a. Feces : 5% cresol.
  b. Household articles : 1-2% chlorine.
- Carrier control, notification.
- Carrier Rx : Ampicillin/Amoxicillin + Probenecid with cholecystectomy.

----- Active space -----

Vaccines for typhoid :

Name	Typhoid conjugate vaccines (TCV)	Vi capsular polysaccharide vaccines (ViCPS)	Ty21a
Administration	IM injection		Oral capsules
Age	> 6 months	> 2 years	> 6 years
Number of doses	1 dose	1 dose with boosters every 2 to 3 years	3 to 4 doses

Soil Transmitted Helminthic Infections

01:15:05

Ascariasis : m/c Soil transmitted Helminthic infection (STHI).

Hookworm : m/c STHI associated with blood loss.

Whip worm.

	Ascariasis	Hookworm
Agent	Ascaris lumbricoides	Ancylostoma duodenale Necator americanus
Size	15–30 cm	10–13 mm
Infective from	Ingestion of eggs	Penetration of skin by larva
Soil	Hard, clay soil	Soft, porous soil
Adult life	9–12 months	1–4 years
Feature	Diarrhea, larva migrans	Anemia

Chandler's index : Number of hookworm eggs per gram of stool.

- <200 : not a public health problem (PHP).
- 200–250 : potential danger of a PHP
- 250–300 : minor PHP.
- >300 : major PHP.

National Deworming days :

Albendazole is given on 10th february & 10th august.

Dose :

- 1–2 years of age : 200 mg.
- >2 years of age : 400 mg.

Note : Mass drug administration of albendazole, ivermection, DEC done.

Rabies

01:20:05

----- Active space -----

Lyssavirus, bullet shaped virus.
100 % fatal.
Two types :

- Street virus : Causes rabies disease, variable incubation period.
- Fixed virus : Used for formulation of vaccine, incubation period is 5-6 days.

Categories of animal bite :

Category	Type of exposure	management
Class I (No exposure)	Touching or feeding animals, animal licks on intact skin.	Wound management
Class II (Exposure)	Nibbling of uncovered skin, minor scratches or abrasions without bleeding.	Wound management + Antirabies vaccine (ARV)
Class III (Severe exposure)	• Single or multiple transdermal bites or scratches. • Contamination of mucous membrane or broken skin with • saliva from animal licks. • Exposures due to direct contact with all wild animals.	Wound management + ARV + rabies immunoglobulin

Immunization against rabies :

Post exposure prophylaxis (PEP) :
Given after animal bite.
Regimens : Essen regimen and modified Thai Red cross regimen.

Essen regimen :

- 5 visits - 5 IM (full) doses.
- 1-1-1-1-1 on days 0, 3, 7, 14 & 28.
- Best PEP for immunocompromised.

Updated Thai Red Cross Regimen :

- 4 visits - 8 ID (0.1 ml) doses.
- 2-2-2-0-2 on days 0, 3, 7, (14) & 28.

----- Active space -----

Note :

- Exposure to bats does not warrant PEP in India
- The risk of human-to-human transmission is minimal and there are no well-documented cases. So PEP is offered to all transplant cases (corneal transplant).
- Covid vaccine can be given along with rabies vaccine.

Pre-exposure prophylaxis :

In high risk occupations like zoo workers, veterinary doctors etc. before animal bite.

Intradermal : 0.1 ml on day 0, 7, 21 or 28 (3 doses).

Intramuscular : one full dose of vaccine on day 0, 7, 21 or 28 (3 doses).

Booster for pre exposure prophylaxis : Given if VNA (vaccine neutralizing antibodies) < 0.5 U/L or 2 yearly.

Re-exposure prophylaxis :

For those who have previously taken complete immunisation cover (Either pre/post exposure).

Adequate wound management.

If PEP within 3 months : ARV not required.

No need for rabies immunoglobulin.

1 site ID @ 0.1mL on day 0 and day 3 (2 doses).

1 site IM, complete vial, on day 0 and day 3 (2 doses).

Summary of various rabies prophylaxis :

Prophylaxis	Visits	Doses	Route
Re-exposure	2	2	ID/IM
Pre-exposure	3	3	ID/IM
Updated Thai regimen	4	8	ID
Essen regimen	5	5	IM

Rabies immunoglobulin (RIg) :

Indicated only in category III bites & immunocompromised individuals with category II/III bites.

RIg should be given within 7 days after animal bite.

Can be given with rabies vaccine.

Cannot be given by intravenous route.

Active space

Dose :

- Equine rabies immunoglobulin : 40 IU/kg.
- Human rabies immunoglobulin : 20 IU/kg.

Maximum immunoglobulin infiltrated into the wound and the remaining in the nearest intramuscular site.

Rabies Ig is given only once in life time (since Ig is not administered in re-exposure prophylaxis).

Tetanus

01:33:10

Post exposure prophylaxis :

Clean wound : brought within 6 hours with a sterile cut.

Unclean wound : brought > 6 hours with sterile cut /unsterile cuts or open or contaminated wounds).

Category	Clean wound	Unclean wound
A : Full immunization < 5 years.	Only wound care	
B : Full immunization b/w 5 – 10 years of age.	Wound care + TT single dose	
C : Full immunization > 10 years ago.	Wound care + TT single dose	Wound care + TT single dose + human tetanus immunoglobulin (hTIg).
D : Unknown/ never taken immunization.	Wound care + TT complete course	Wound care + TT complete course + hTIg.

----- Active space -----

COMMUNITY MEDICINE REVISION 9

Infectious disease epidemiology : Communicable diseases

00:00:12

Time variables :

1. Incubation period : Time between entry of organism & 1st sign & symptom.

Disease	Incubation period (days)
Chicken pox	10–21 (14–16)
Measles	8–16 (14–16)
Rubella (German measles)	14–21
Influenza	1–3
Hepatitis A	15–50
COVID	3–12

2. Generation time : Time between entry of organism & maximum communicability.
3. Serial interval : Time between primary and secondary case.
4. Latent time : Time between onset of risk factors and signs & symptoms of a non communicable disease.

Isolation & quarantine :

Isolation	Quarantine
In patients & cases	Apparently healthy individuals
Prevent spread of infection	Prevent spread of infection
Primary level of prevention	Primary level of prevention
Done for maximum communicable period	Done for two times the incubation period

Active space

Disease	Duration of isolation
Chicken pox	Until all lesions are crusted (About 6 days after onset of rash)
Measles	7 days after onset of rash
Hepatitis A	3 weeks of onset
COVID	14 days
Tuberculosis	Until 3 weeks of effective chemotherapy
Meningococcal meningitis Streptococcal pharyngitis	Until the first hours of effective therapy are completed

Source variables

00:07:28

Reservoir : Infectious agent lives and multiplies (Natural habitat).

Source : Infectious agent lives, multiplies & transmits.

Host : Infectious agent lives and infects (Harbors).

a. Primary host/definitive host : Sexual multiplication/maturation occurs.

b. Secondary host/intermediate host : Asexual development occurs.

E.g :

In Filariasis : Man (Primary host) & mosquito (Culex) (Secondary host).

In Guinea worm : Man (Primary host) & cyclops (Secondary host).

Types of host

00:10:17

	Cases	Subclinical cases	Carrier
Risk factor	+	+	+
Pathology	+	+/-	+/-
Signs/symptoms	+	-	-
Transmits to others	-/+	-	+

Types of cases :

- Primary case : First case in community.
- Secondary case : Subsequent cases which arise from the primary case within 1 incubation period.
- Index case : First observed case in community.

----- Active space -----

Attack rate :

$$\text{Attack rate} = \frac{\text{Total number of cases}}{\text{Total susceptible population}} \times 100 \text{ (Or) } 1000$$

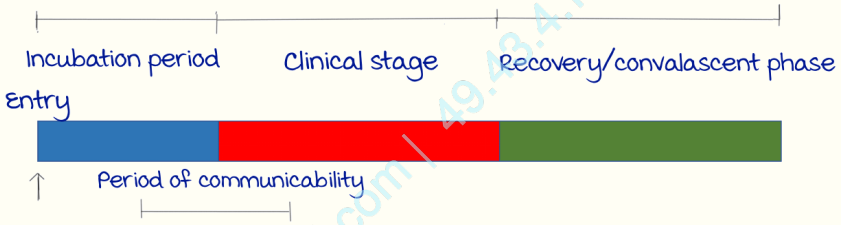
Used in : Communicable diseases of short duration.

Secondary attack rate :

$$\text{Secondary attack rate} = \frac{\text{Total number of } 2^{\circ} \text{ cases}}{\text{Total susceptible population} - 1^{\circ} \text{ cases}} \times 100$$

Used in : Disease of short duration with high infectivity rate.

Carrier stage :



Period of communicability :

- Time period during which disease spreads.
- Measles : 4 days before & 4 days after rash.
- Rubella : 7 days before & 7 days after rash.

Types of carriers :

Chronic (≥ 3 months)	Healthy	Convalescent	Incubatory
1. Malaria 2. Meningitis 3. Typhoid 4. Dysentery 5. HBV 6. Gonorrhea	1. Polio 2. Typhoid 3. Cholera 4. Diphtheria 5. Meningitis Mnemonic : CM DPT	1. Diphtheria 2. Typhoid 3. Cholera 4. Dysentery 5. Pertussis	1. Diphtheria 2. Measles 3. Mumps 4. Polio 5. Pertussis 6. HBV 7. Influenza

Healthy carrier : Arise from a subclinical case or a non virulent strain.

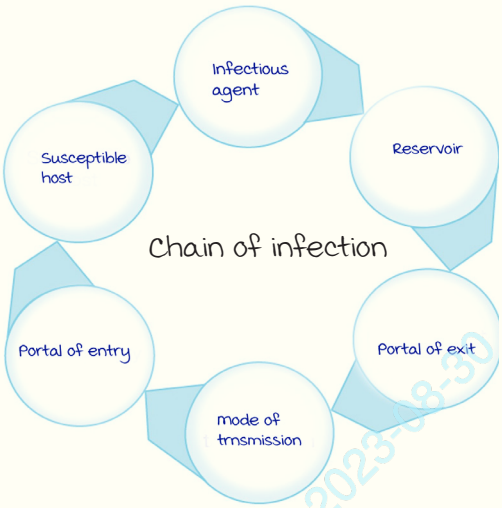
Modes of transmission

00:19:58

----- Active space -----

Disease prevention & control :

- Interruption of transmission (most effective way).
- Weakest link of chain of infection : mode of transmission.
- Protect the susceptible host : Vaccines.



Types of transmission :

Direct transmission	Indirect transmission
Droplet transmission	Fomite borne
Vertical /transplacental	Airborne (Dust/droplet nuclei)
Inoculation on skin/mucosa (Bite)	Vehicle borne
Direct contact	Unclean hands
Contact with soil	Vector borne
Mnemonic : DTICS	Mnemonic : FAV UV

Airborne & droplet mode :

Droplet transmission	Airborne transmission
Through large droplets	Droplet nuclei
Fall around 30-60 cm	Travel around few hundred meters

Biological transmission :

	Change in	Example
Propagative	Number	Plague, rat flea
Cyclo developmental	Shape, size & stage	Filaria in culex
Cyclo propagative	Number, shape, size & stage	Malaria parasite

----- Active space -----

Levels of precaution, PPE kits

00:27:31

Condition	Precautions
Abscess, diarrhoea, vomiting, hepatitis, pregnancy, general OPD	Contact/ droplet
Rash, fever, cough	Droplet/ airborne
TB, measles, COVID, influenza, chicken pox	Airborne

- Airborne : N95 MASK.
- Droplet : Any mask.
- Contact : Gloves, apron and hand hygiene.

Donning & doffing :

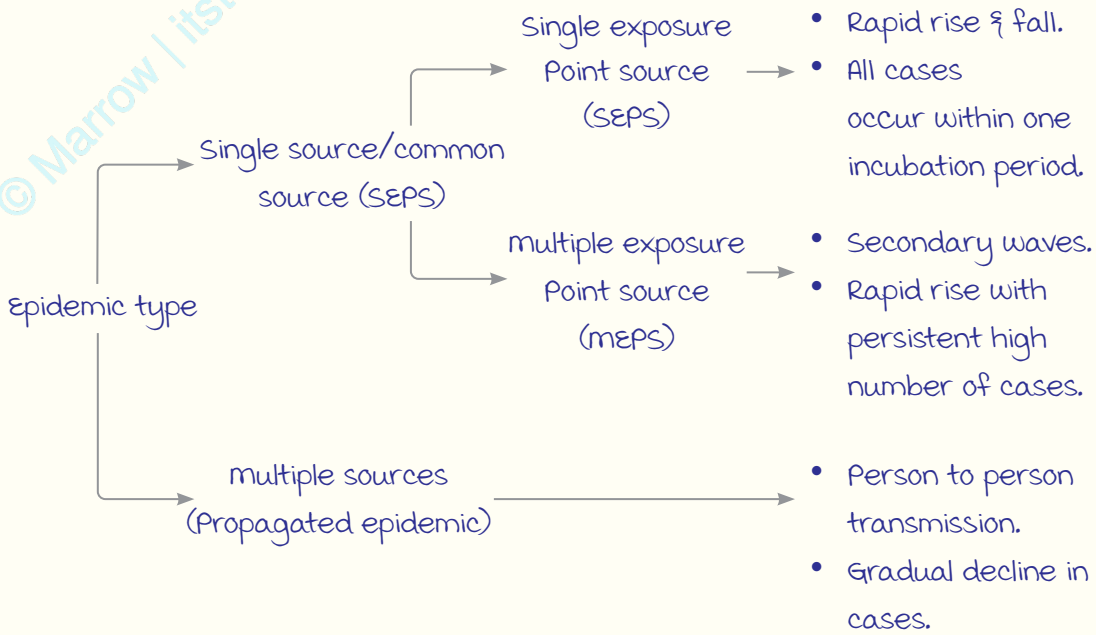
Doning : Apron → Mask → Eye/face → Gloves.

Doffing : Gloves → Eye/face → Apron → Mask.

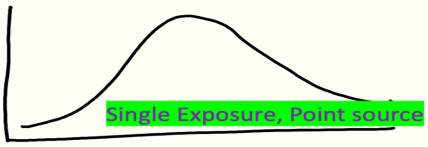
Disease frequency : Epidemic variables

00:30:47

1. Sporadic : Scattered number of cases (Not epidemiologically linked).
2. Endemic : Persistent presence of disease in a defined geographical area.
3. Epidemic : Sudden rise in number of cases which is more than :
   - 2 SD or
   - 80 % of expected frequency.



Active space



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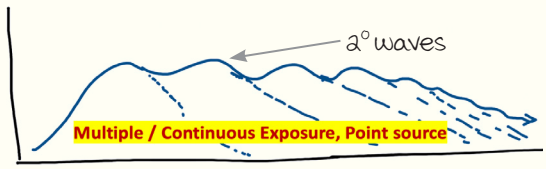
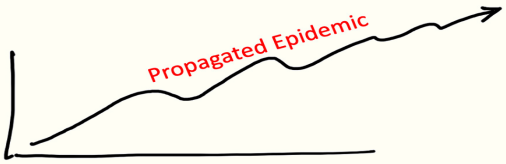


MEPS



Propagated epidemic

4. Pandemic : Spread of disease over 2 continents / 2 WHO regions.

Basic reproduction number/basic reproduction rate :

- Absolute number of new cases which arise from one case.
- Ro = 1 : Infection levels are maintained.
- Ro > 1 : Epidemic.
- Ro < 1 : Number of cases will decline.

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COMMUNITY MEDICINE REVISION 10

Basic epidemiology

00:00:44

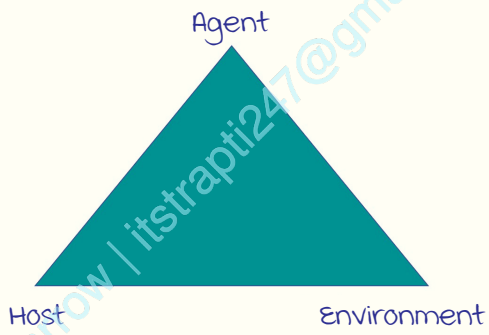
Definition :

Study of distribution & determinants of disease or health related states/events and measures to control/prevent the disease.

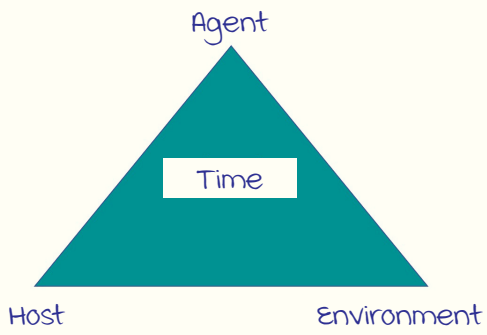
Given by : Dr. John M Last.

Fathers & founders	Name
Father of Public health	Cholera
Father of Epidemiology	John Snow
Founder of Epidemiology	Fracastorius
Father of Evidence based medicine	David Sackett
Father of Medical statistics	John Graunt

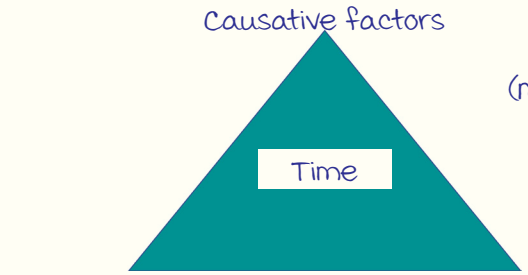
Epidemiological triad



Epidemiological triangle



Advanced model of triangle of epidemiology

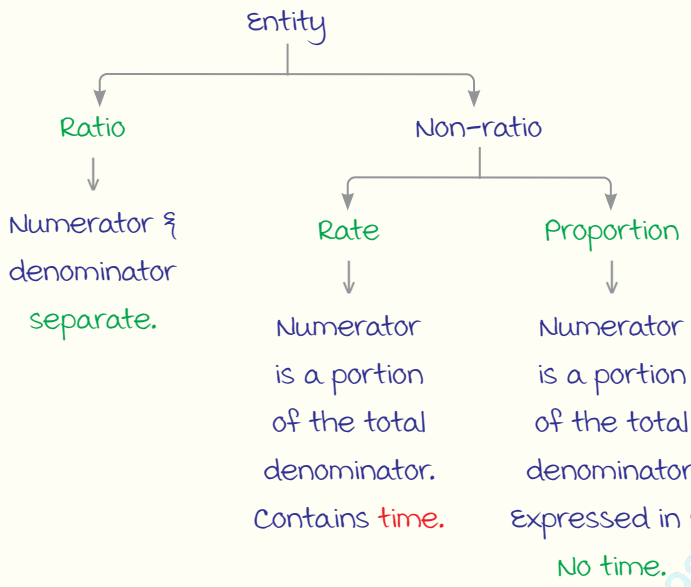


(most modern concept of epidemiology)

Ecological factors
Political factors
Social factors

Active space

Tools of measurement :



$$\text{Maternal mortality ratio} = \frac{\text{Maternal deaths}}{\text{Live births}} \times 1{,}00{,}000$$ India : 97/lakh.

$$\text{Maternal mortality rate} = \frac{\text{Maternal deaths}}{\text{Women in reproductive age group}} \times 1{,}00{,}000$$

Examples :

Ratio	Rate	Proportion
• Maternal mortality ratio. • Number of healthy/ Sick. • Dead/Alive.	• Attack rate • Incidence • Death rate • Birth rate	• Case Fatality Rate (CFR) • Prevalence • Secondary attack rate

Note : CFR assesses virulence of a disease.

Measures of mortality :

1. Crude death rate = $\frac{\text{Total deaths}}{\text{Mid year population}} \times 1000$ (India : 6/1000).

Mid year population measured on 1st July.

2. Cause specific death rate = $\frac{\text{Deaths due to a specific cause}}{\text{Mid year population}} \times 1000$.

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3. CFR = $\frac{\text{Deaths due to a disease}}{\text{Total cases of same disease}} \times 100$

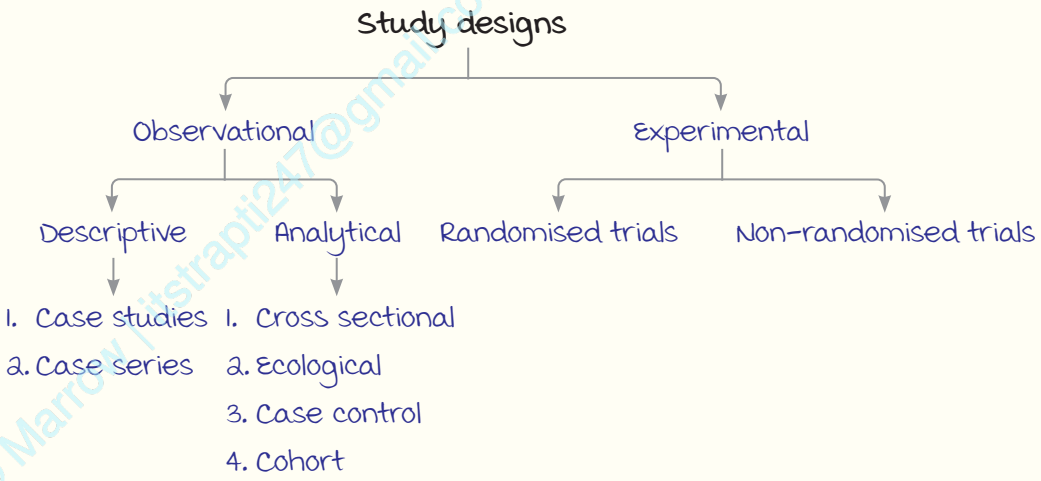
4. Proportional mortality rate = $\frac{\text{Deaths due to a disease}}{\text{Total deaths}} \times 100$

Standardisation :

Comparing mortality rates in different population groups.

Types :

Direct standardisation	Indirect standardisation
When age specific death rates are available.	When age specific death rates are not available. Standardised mortality ratio (SMR) is calculated. SMR = $\frac{\text{Observed deaths}}{\text{Expected deaths}} \times 100$



Descriptive epidemiology

00:15:23

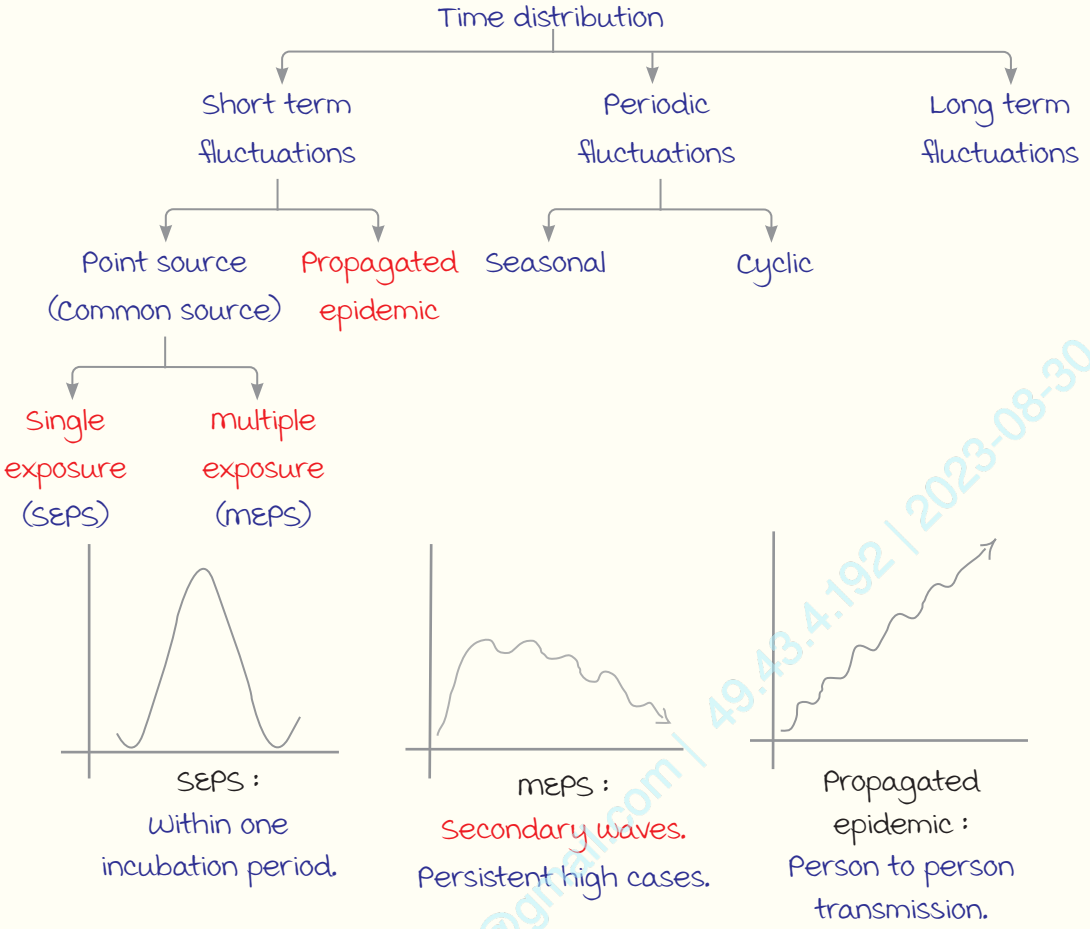
Helps in formulating hypothesis.

Most basic study.

Disease is described based on time, place and person distribution.

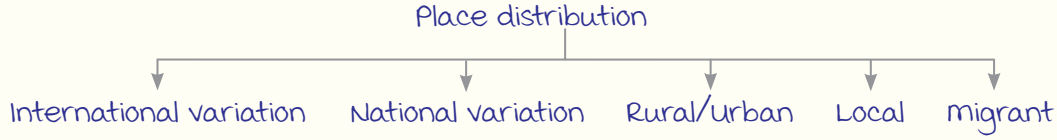
Active space

Time distribution :



Periodic fluctuations	
Seasonal	Cyclic
Diarrhoea → Summer. Respiratory infections → Winter. Viral infections → Winter/spring.	Measles : 2–3 years. Rubella : 6–9 years. Influenza : 7–10 years.
Long term fluctuations (Secular trends)	
↓ : Polio, typhoid, diphtheria. ↑ : CHD, obesity, cancer.	

Place distribution :



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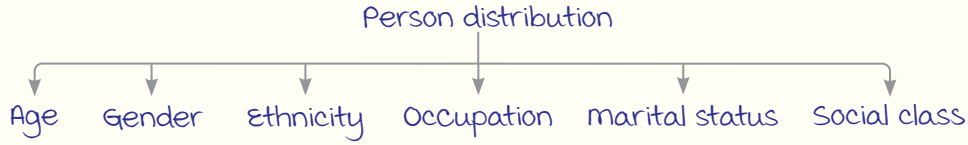
Person distribution :



Analytical epidemiology

00:20:33

Types :

Cross sectional	Case control	Cohort	Ecological
Snapshot of population (Survey)	Retrospective (Effect → Cause)	Prospective (Cause/RF → Effect)	Correlational (Compare populations)
Prevalence	Study of choice : Rare diseases	Incidence	Correlation of variables
Odds ratio	Odds ratio (OR)	RR, AR, PAR	-
Individual	Individual	Individual	Population
-	Recall bias	Attrition bias	Ecological fallacy

RF : Risk Factor.
AR : Attributable Risk.
RR : Relative Risk/Risk Ratio.
PAR : Population Attributable Risk.

Odds ratio & relative risk :

	Disease	No disease
Exposure +	a	b
Exposure -	c	d

$$OR = \frac{a \times d}{b \times c}$$

OR is a/k/a cross product ratio.

$$RR = \frac{\text{Incidence in exposed}}{\text{Incidence in non-exposed}} = \frac{\frac{a}{a+b}}{\frac{c}{c+d}} = \frac{a(c+d)}{c(a+b)}$$

Interpretation of OR/RR :

OR/RR	Association	Factor
1	No association	-
< 1	Negative	Protective
> 1	Positive	Risk

Active space

$$AR = \frac{\text{Incidence in exposed} - \text{Incidence in non-exposed}}{\text{Incidence in exposed}}$$

S/o the amount of disease which may be eliminated if the RF is eliminated.

$$PAR = \frac{\text{Incidence in total population} - \text{Incidence in non-exposed}}{\text{Incidence in total population}}$$

S/o amount of disease which may be reduced in any population, if the RF is eliminated.

Experimental epidemiology

00:39:55

Types :

Non-randomised	Randomised	Evidence based medicine
• Natural experiments • Before after trials	• Clinical trials • Risk factor trials • Preventive trials • Cessation experiments • Trial of ecological agents	• Systematic reviews • meta-analysis

Randomisation :

- Random allocation to different groups with known and equal chance.
- Done at the level of allocation.
- Removes selection bias and confounding.

Randomised trials : Heart of experimental trials.

Evidence based medicine :

Study of studies.

1. Systematic reviews : To assess factors, association and other variates among various studies.
2. meta-analysis : Statistical method to assess final effect of an intervention/RF in causing the effect (Best measure for finding effect).

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Guidelines for epidemiological studies :

Study	Guideline
Randomised control trial (RCT)	CONSORT (Consolidated Standards of Reporting Trials)
Observational studies	STROBE (Strengthening the Reporting of Observational studies in Epidemiology)
Systematic reviews	PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses)
Quality of observational studies analysed for meta-analysis	MOOSE (meta-analyses of Observational Studies in Epidemiology)
Case reports	CARE
Qualitative research	SRQR
Diagnostic/prognostic studies	STARD
Quality improvement studies	SQUIRE
Clinical trials protocol	SPIRIT

Levels of evidence

00:45:28

Levels of evidence :

Best : Evidence based medicine (meta-analysis > systematic reviews).

Level	Evidence obtained from
Ia	meta-analysis of RCTs
Ib	At least one RCT
IIa	At least one trial, well designed, controlled study without randomisation
IIb	Well designed quasi trial (Non-randomised, non-controlled)
III	All other studies
IV	Expert committee reports, opinions/clinical experience of respected authorities

Note : Number needed to treat is the number of individuals to be treated with the drug to avoid one death/adverse outcome.

Active space

	Event +	Event −	
Drug +	a	b	a+b
Drug −	c	d	c+d
	a+c	b+d	

Control group Event Rate (CER) = $\frac{c}{c+d}$

Experimental group Event Rate (EER) = $\frac{a}{a+b}$

Absolute Risk Reduction (ARR) = CER − EER.

Number needed to treat = $\frac{1}{ARR}$

Relative Risk Reduction (RRR) = $\frac{CER - EER}{CER}$

Types of errors & biases

00:53:55

They can be :

1. Systematic errors : Bias.
2. Random errors : Sampling errors.

Bias	Description	Seen in
Selection bias	Differential selection	Any studies
Attrition bias	Loss to follow up	Cohort studies
Recall bias	Differential ability to recall between cases and controls	Case control studies
Hawthorne effect	Change in behaviour while under observation	Cohort studies and trials
Berksonian bias	Differential hospital admission rates	Hospital based case control studies

Ecological fallacy : Results of an ecological study are not applicable at individual level.

----- Active space -----

Blinding : To remove bias (Bias can be removed with randomisation also).

Single blind : Subject blinded.

Double blind : Subject + Doctor blinded (m/c).

Triple blind : Subject + Doctor + Statistician blinded (Best).

Confounding factor :

1. Associated with risk factor.
2. Associated with disease.
3. Can directly/indirectly lead to disease.

Type of confounder	Removed by
Known	Matching
Unknown	R : Randomisation S : Standardisation S : Stratification R : Regression

Randomisation : Universal treatment for errors in epidemiology.

Hill's criteria of causal association :

1. Biological plausibility.
2. Specificity of association (most difficult, least essential) : Same RF → Same disease.
3. Coherence of association : RF leads to disease every time.
4. Validity of association : Good sensitivity and specificity with valid association.
5. Dose response relationship : ↑ RF ∝ ↑ Disease.
6. Temporality (most important) : RF always precedes the disease.

COMMUNITY MEDICINE REVISION 11

Active space

Levels of prevention

00:01:27

	Risk factor	Disease	Complications	Disability/ Death
Primordial prevention	No	No	No	No
Primary prevention	Yes	No	No	No
Secondary prevention	Yes	Yes	No	No
Tertiary prevention	Yes	Yes	Yes	No

Screening is a secondary level of prevention.

Types of screening

00:02:50

1. Prescriptive screening :

Secondary level of prevention. E.g. :

- FOBT : Colon cancer
- Mammography : Breast cancer
- FBG/ HbAIC : Diabetes
- VIA / PAP : Cervical Cancer
- VDRL : Syphilis

2. Predictive screening/ presumptive screening :

Primary level of prevention.

- HIV testing in ANC pregnant female (opt out testing) & in blood donation (unlinked anonymous testing).
- Pre-employment medical check up.
- Quarantines.

Timings in screening test :

Latent period :

- The time period b/w risk factor & usual point of diagnosis (Long time).
- First possible point of diagnosis : Expensive, interventional, but best benefit to the patient.
- Critical point of diagnosis : Acceptable & affordable to the public and gives optimum benefit.

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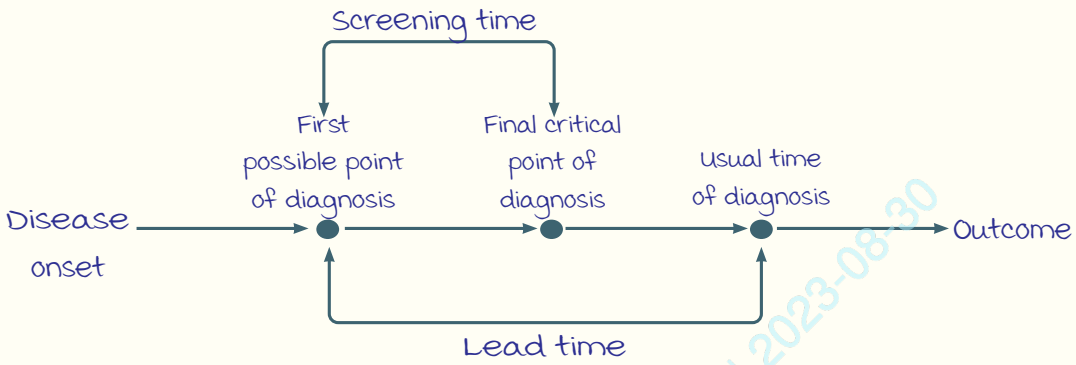
Screening time : Period between the first possible point to the critical point (Short distance).

Lead time : Period between the first possible point till the usual point of diagnosis (Long distance).



Properties of screening tests : 00:09:56

	Disease	No disease	
Test (+)	True positive (TP)	False positive (FP)	TP + FP
Test (–)	False negative (FN)	True Negative (TN)	FN + TN
	TP + FN	FP + TN	

- Sensitivity (Probability of having a positive test out of total diseased) = TP/ TP + FN
- Specificity (Probability of having a negative test out of total healthy) = TN/ FP + TN
- Positive predictive value (PPV) (Probability of having a disease out of total tested positive) = TP/ TP + FP
- Negative predictive value (NPV) (Probability of having no disease out of total tested negative) = TN/ FN + TN

Bayes formula : To calculate PPV & NPV :

$$PPV = \frac{Sn \times prevalence}{(Sn \times Prevalence) + [(1-Sp) \times (1-prevalence)]}$$

$$NPV = \frac{Sp \times (1-prevalence)}{Sp \times (1-prevalence) + [(1-Sn) \times prevalence]}$$

Diagnostic accuracy of a test (PPV) = TP/Total tested positive.

Affected by :

- Sensitivity (Sn) • Specificity (Sp) • Prevalence of a disease (most affected)

----- Active space -----

False positivity is higher in :

- Low prevalence
- Low specificity
- High sensitivity

Likelihood ratio :

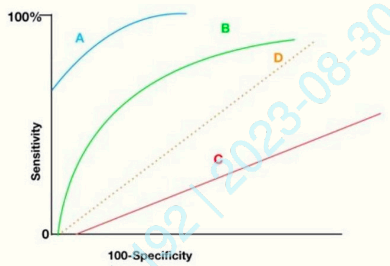
Chance of having a disease.

- LR for positive test : Sn/1 – Sp
- LR for negative test : 1 – Sn/Sp

Receiver operator characteristic (ROC) curve :

- Graphical presentation of likelihood ratio.
- Sensitivity should be high.
- False positive should be less.

(Sensitivity should be high and false positive should be less) — Best (A curve)



Combination of tests :

	Sensitivity	Specificity	NPV	PPV
Series	Low	High	Low	High
Parallel	High	Low	High	Low

Medical research & biostatistics

00:24:12

Data types :

Quantitative	Qualitative
measurable	Countable
Continuous	Discrete
E.g : Weight, height, electrolyte levels	E.g : Color, gender, types of diseases

Data Scale (NOIR) :

Nominal : Name, no order. E.g. Blood groups, gender, socioeconomic status, etc.

Ordinal : Order or ranks. E.g. Grades of diseases, severity of diseases, stage, etc.

Interval : No absolute zero point or starting point. Eg : °C/F°.

Ratio : Has absolute zero point. Eg : Weight , height, Kelvin scale etc.

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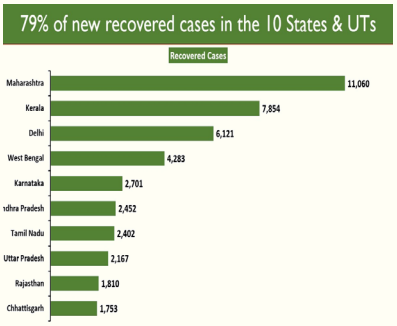
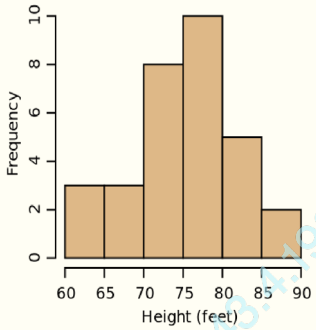
Graphical presentation :

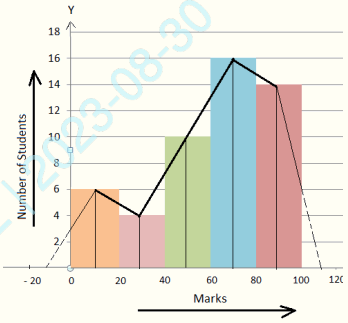
Qualitative	Quantitative
• Bar chart • Pie chart • Pictogram • Spot maps • Venn diagram	• Histogram • Frequency polygon/chart • Scatter plot • Ogive



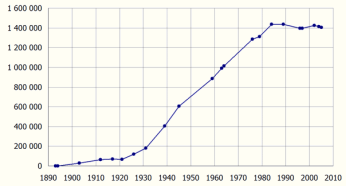
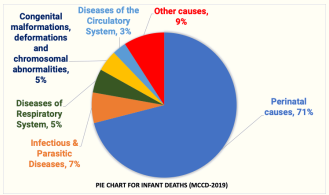
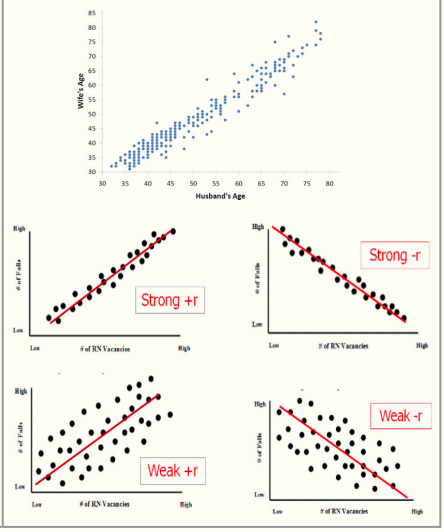
Bar chart



Histogram



Frequency polygon

Charts	Description	Image
Ogive curve	• A frequency plot of Quantitative data with a cumulative frequency.	
Pie chart	• Sectoral presentation. • Chart of choice for technical data.	
Scatter plot	• Always between two variables. • Strength & direction of relation can be known. Pearson's correlation coefficient 'r': • Ranges from −1 to 1 • −1 : perfect negative correlation. • +1 : perfect positive correlation.	

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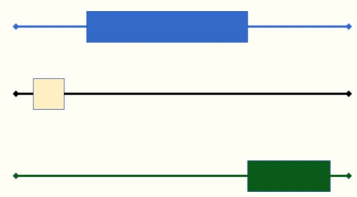
Charts	Description	Image
Box & whisker plot	• Tells about data distribution. • Deviation in the data (Skews).	
Spot maps	• Geographic maps • Tells about location of a variable.	
Pictograph	• Symbolic presentation. • Useful for spread of awareness & health education.	
Venn diagram	Overlapping qualitative data.	

Measures

00:45:40

Measures of central tendency :

mean	median	mode
• Average value. • Easy. • Most affected by extreme values.	• Central value after arranging in ascending or descending order. • Least affected by extreme values.	• Most frequently occurring value. • Most robust.

Measures of variation :

00:47:30

1. Range : Maximum value − minimum value.
2. Standard deviation : Root of mean of squared deviations.

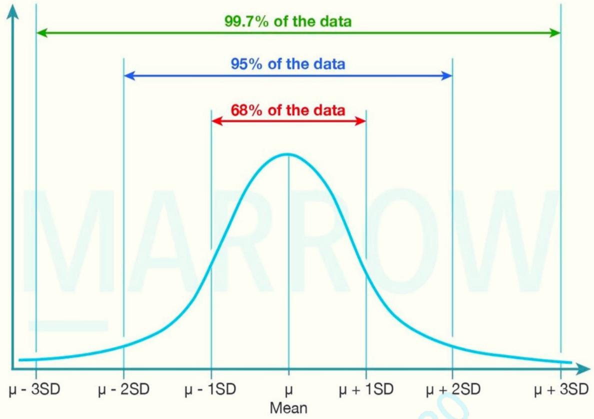
$$(RMSD) = \sqrt{\frac{\Sigma (x-\bar{x})^2}{n}}$$

n−1 : if sample size < 30.

----- Active space -----

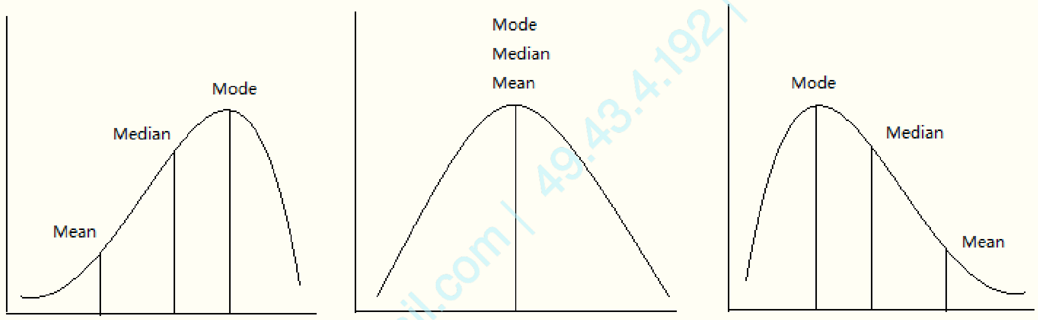
Normal distribution curve :

- Gaussian distribution.
- Bilaterally symmetrical.
- Bell shaped curve.
- Ends never touch the baseline.
- Mean = median = mode.
- SD = 1, Variance = 1.
- Area under curve = 1 or 100%.



Skew :

- Direction of skew is always towards the tail.
- Left skew : mean< median < mode.
- Right skew : mean> median > mode.



Left skew Normal Distribution Right skew

Tests of significance

00:56:11

- Pre testing & post testing between 2 groups.
- Calculates the probability (p-value).

Parametric/ Quantitative	Group	Non parametric/ Qualitative
Follows normal distribution curve		Does not follow normal distribution curve
Paired t-test	Single group	Mc Nemar test
Unpaired t-test	Two groups	Chi square test
ANOVA	≥ 3 groups	Kruskal wallis test

- Ordinal data : Wilcoxan rank test.

Normalcy of data	Kolmogrov Smirnov
Outliers	Dixon Q test
Agreement between 2 or more observers	Kappa statistics
Small sample (n < 30)	Yates correction
Confounders	Regression analysis

P- value (Probability value) :

- Range from 0 to 1.
- P value at ± 2 SD is 0.05 (Normal).

Significant	Non-significant
p < 0.05	p > 0.05
Value outside the normal zone	Value within normal zone
No effect is observed	Effect is observed.
Null hypothesis is rejected	Null hypothesis is accepted.

Null hypothesis :

- No difference among groups.
- No effect of the intervention.

Type 1 error : Null hypothesis is true but rejected (more serious).

Type 2 error : Null hypothesis is false but accepted.

Sampling :

Sample size formula = $4pq/l^2$

where p = prevalence, q = 100 − prevalence (%), l = absolute allowable error.

Non random sampling	Random or probability sampling
Convenient sampling	Simple random sampling : Random number method (used more).
Purposive (Secondary intention)	Stratified random : a. Sampling frame divided based on another variable. b. Best to remove confounder.
Quota sampling (Predetermined group)	Systematic sampling : N^{th} individual is selected.
Snow ball sampling (Selected sample will select more samples)	Cluster sampling : Large homogeneous population. Done to evaluate health services. • NIDDCP : 30 clusters X 90 children. • UIP : 30 clusters x 7 children.

----- Active space -----

- Standard error of mean :
  a. Quantitative data.
  b. Formula = $\frac{Sd}{\sqrt{n}}$
- Standard error of Proportions :
  a. Qualitative.
  b. Formula = $\frac{\sqrt{pq}}{n}$
- Confidence interval = mean (Or proportion) ± 2 x SE.
- Coefficient of variation = SD/mean x 100.
- Zone of normalcy = ± 2 SE , p-value = <0.05 ; >0.05.

COMMUNITY MEDICINE REVISION 12

Active space

Nutrition:

00:01:19

Nutritional requirement definitions : Based on National Institute of Nutrition (NIN) guidelines (2020).

- Acceptable Macronutrient Distribution Rate (AMDR) : Usually expressed as a percentage of energy, with a lower and upper limit.
- Recommended Dietary Allowance (RDA) : The amount of nutrient required in 95% of the population.
- Estimated Average Requirement (EAR) : The amount of nutrient required in 50% of the population.

Proximate principles : Energy providing food products.
Carbohydrates → 4 Kcal/g, proteins → 4 Kcal/g and fats → 9 Kcal/g.
Note : Energy providing products that are not a part of proximate principles : Alcohol → 7 Kcal/g and fibers → 2 Kcal/g.

Dietary goals :

- Carbohydrates : 50–70% of total diet.
- Proteins : 10–15% of total diet.
- Fats : 10–35% of total diet (ideal = 20%).

Indian reference men and women :

	Reference male	Reference female (Non-pregnant)
Age	19 – 39 years	
Weight	65 Kg	55Kg
Height (95th centile)	1.77 m	1.62 m
BMI (18.5–22.9 Kg/m^2)	20.75	20.95

----- Active space -----

Recommended Dietary Allowance

00:06:00

RDA of calories for men and women (2020 update) :

Variable	Sedentary worker	Moderate worker	Heavy worker
Male	2100 Kcal	+600	+700
Female	1660 Kcal	+500	+600

Nutritional requirements in pregnancy :

	Non-pregnant	Pregnancy			Lactation	
		1st Trimester	2nd Trimester	3rd Trimester	0-6 months	6-12 months
Protein (g/day)	45.7	45.7	+9.5	+22	+16.9	+13.2
Energy (Kcal/day)	1660 (S) 2130 (M) 2720 (H)	+350 (average)			+600	+520
Iron (mg/day)	29	27			23	
Calcium (mg/day)	1000	1000			1200	
Folate (mcg/day)	220	570			330	
Iodine (mcg/day)	150	250			280	

Nutritional values for men and women :

Variable	Protein (g/day)	CHO (g/day)	Iron (mg/day)	Iodine (mcg/day)	Vitamin A (mcg/day)	Vitamin D (IU /day)
Male	54	130	19	150	1000	600
Female	45.7	130	29	150	850	600
Pregnancy	+9.5 (2T) +22 (3T)	175	27	250	900	600
Lactation	+16.9 (0-6m) +13.2 (6-12m)	200	23	280	950	600

- Sodium : 2000 mg/day (5g of salt).
- Potassium : 3500 mg/day.

Protein Indicators

00:11:20

Active space

Indicators of protein utilization :

1. Amino acid score.
2. Net protein utilization : m/c.
3. Protein digestibility corrected amino acid score.
4. Digestible indispensable amino acid score (DIAAS) : Best indicator.

Net protein utilization (NPU) :

$$NPU = \frac{\text{Amount of nitrogen retained}}{\text{Amount of protein ingested}} \times 100$$

Note : NPU = Biological Value (BV) x Digestibility Coefficient (DC).

Limiting amino acids

00:14:23

Limiting Amino Acids in :

- Cereals : Thr + Lys (Mnemonic : Wheat, rice served in Th-a -li).
- Maize : Trp + Lys (Mnemonic : Maize carried in Tr -o -ly).
- Pulses : Cys and Met (Mnemonic : Daal everyday → Headache, take Paracetamol, PCM).

Pellagra : Tryptophan not converted to niacin → Niacin deficiency

- Maize : ↓ tryptophan + ↑ leucine → ↑ risk of pellagra.
- 4Ds of pellagra: Diarrhea, Dermatitis (Exfoliative), Dementia, Death.

Fatty Acids

00:18:18

Classification with sources:

- Saturated Fatty Acids (Single bonds) : Animal meat (A solid form of fat).
- Unsaturated fatty acids :
  a. Mono-unsaturated fatty acids (MUFA) and Oleic acid.
  Rich in olive oil, mustard, and ground nuts (Mnemonic : OMG).
  b. Poly-unsaturated fatty acids (PUFA) :
  - Omega 3 fatty acids (03FA) : Alpha Lino-lenic acids. Rich in flaxseed.
  - Omega 6 fatty acids (06FA) : Linoleic acid. Rich in Safflower.

Note :

Long chain derivatives of 03FA : Eicosapentanoic acid. Rich in fish.

Long chain derivative of 06FA : Arachidonic acid. Rich in Egg and milk.

----- Active space -----

Vitamins and Minerals

00:22:12

Vitamin	Biochemical name	Deficiency related conditions
Vit A	Retinol	Night blindness, xerophthalmia
Vit B1	Thiamine	Beri Beri, Wernicke's encephalopathy
Vit B2	Riboflavin	Ariboflavinosis
Vit B3	Niacin	Pellagra
Vit B5	Pantothenic acid	Burning foot syndrome
Vit B6	Pyridoxine	Peripheral neuropathy
Vit B7	Biotin	Dermatitis
Vit B9	Folic Acid	Megaloblastic anaemia
Vit B12	Cyanocobalamin	Pernicious anaemia
Vit C	Ascorbic Acid	Scurvy
Vit D	Cholecalciferol	Rickets (Children), Osteomalacia (Adults)
Vit E	Tocopherol	Dermatitis, infertility
Vit K	Phylloquinone	Hemorrhagic disease of newborn, bleeding disorders

Vitamin A deficiency :

- Called as "Xerophthalmia" (Not night blindness).
- Non-specific feature (Not a primary feature) : Night blindness.
- First clinical sign : Conjunctival xerosis.
- Epidemiological marker : Bitot spots.

WHO grading of xeropthalmia :

- X n : Night blindness
- X 1a : Conjunctival xerosis
- X 1b : Bitot spots
- X 11 : Corneal xerosis
- X 111a : Corneal ulcer
- X 111b : Keratomalacia

} Irreversible damage

National Vitamin A Deficiency Prophylaxis Program :

- 9 prophylactic mega-doses of Vitamin A (< 5 yr children, total of 17 IU) :
  a. 6m to 1yr @ 1 lac IU at 9 months with measles vaccine.
  b. 1 to 5 year @ 2 lac IU every 6 month.
- Treatment of Vitamin A deficiency : 3 doses of Vitamin A on day 0, 1, and 14.

Active space

The doses are :

a. < 6 months : 50,000 IU
b. 6 months – 1 yr : 1 lac IU
c. 1 – 5 yr : 2 lac IU

- Administered by Anganwadi workers (Under ICDS program).
- 1 mL of Vit A solution bottle (Amber colored, heat and light sensitive) has 1 lac IU.

Iron :

- m/c cause of hidden hunger : Iron.
- Sources of iron : Heme (Animals) > Non-heme (Plants)
- Rich non-heme sources : Pumpkin seeds > dates > pista > green leafy vegetables.
- Ingested in ferric form and absorbed in ferrous form.
- Promoters of iron absorption : Vitamin C (Ascorbic acid).
- Inhibitors of iron absorption : Oxalates, phytates, tannin, and calcium.

Egg :

- 60g weight, 60 Kcal, 6g protein, 6g fat , 1.5mg iron, 30 mg calcium.
- Highest NPU : 97%.
- Consumption of raw egg causes biotin deficiency due to a protein called Avidin (Avidin is destroyed by boiling or heating).
- Richest source of natural cholesterol and docosahexaenoic acid (Fatty acid for brain development and growth).

Human Breast Milk

00:31:15

Human milk compared to buffalo milk :

- Energy : Half of that in buffalo milk.
- Fat : Half (Low quantity but good quality d/t more PUFA).
- Protein : 1/4th but best quality (High in cysteine and taurine → brain development).
- Richest amount of PUFA and DHA.

Pasteurisation :

- Disinfection (Not sterlization).
- Vat/holder method (Rurals) : Heat till 66–67° C → hold for 30 min → cool it at room temperature.

----- Active space -----

- Higher temperature short time (Urban communities) : 72–74° C for a few sec → rapid cooling. It is a faster method.
- Ultra high temperature method (most modern and the best) : 2 phases → 1st : 125° C for a few seconds and 2nd : Treated under high pressure.

Food Intoxicants

00:35:13

Neurolathyrism :

- Lower motor neuron type of CNS disorder.
- M/C affects knee and hip joints.
- Clinical features :
  a. Stage 1 : Asymptomatic (Latent).
  b. Stage 2 : No stick stage (Limping).
  c. Stage 3 : One stick stage.
  d. Stage 4 : Two stick stage.
  e. Stage 5 : Crawler (Inability to stand).

Food intoxicants :

Disease	Toxin	Food product	Preventive methods
Neurolathyrism	Beta Oxalyl Amino Alanine (BOAA)	Khesri Dal (Lathyrus sativus)	Vit C, steeping, and parboiling
Endemic ascites (Severe liver toxicity)	Pyrrolizidine (Crotalaria seeds)	Adulterated millets	Sieving
Epidemic dropsy	Sanguinarine (Argemone mexicana)	Adulterated mustard oil	Pre-testing (Nitric acid chromatography test) De-weeding
Aflatoxicosis (Storage fungus)	Aflatoxin (Aspergillus flavus)	Stored grains (Ground nuts)	Low humidity and improving ventilation
Ergotism (Field fungus on flowering plants)	Ergot alkaloid (Claviceps purpurea)	Rye, sorghum, bhajra	Floating plant in 20% salt solution

Note :

Active space

Clinical features of epidemic dropsy :

- Congestive Cardiac Failure.
- Pedal edema.
- Glaucoma.
- Diarrhoea.

Legislation for food and nutritional guidelines :

- Food safety and standards authority of India (FSSAI) : Safe guards food consumed in India.
- Agriculture Marketing (AGMARK) : Guarantee for agricultural products (Seeds, fruits) that are produced and consumed in India.
- Codex Alimentarius (Food code) : Collection of international standards, guidelines and codes of practice adopted by Codex Alimentarius Commission.

Richest Sources of vitamins and minerals :

- Vit A : Halibut fish.
- Vit C : Amla (Indian gooseberry).
- Vit B1 : Organ meat, husk of grains and nuts.
- Vit B12 : Animal meat.
- Vit D : Cod fish, halibut fish.
- Iodine : Japanese see weed.
- Iron : Red meat, jaggery.

Note : Iron in jaggery is from the iron cooking utensil and not from the sugarcane plant itself.

Environment : Air

00:44:11

Air Pollution :

- Primary air pollutants (gasses) :
  a. CO_2 (most responsible for global warming/climate change).
  b. CO.
  c. SO_2 (most important primary air pollutant in industrial area).
  d. Methane.
  e. CFC.
  f. Other gasses.

----- Active space -----

- Secondary air pollutants :
  - a. Smoke : Soiling index.
  - b. Dust : Grit index.

Note : Water vapour is the most responsible element for green house effect.

Air Quality Parameters Index :

The parameters of Corrected Effective air Temperature (CET) :

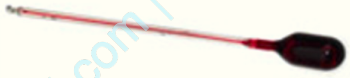
- Temperature : Simple thermometer.
- Humidity : Hygrometer or psychrometer.
- Velocity/Movement : Anemometer.
- Cooling power of Air : Kata thermometer.

} Effective Air Temperature

- Radiant Heat : Globe thermometer.

Note : Low air velocity measurement : Kata thermometer

Globe thermometer



Kata thermometer

Anemometer

The 8 parameters of Air Quality Index (AQI) (By Ministry of Environment) :

- Smoke.
- Particulate matter (< 2.5 micrometre : PM2.5 and < 10 micrometre : PM10).
- Nitrogen dioxide (NO_2).
- Sulphur dioxide (SO_2).
- Carbon monoxide (CO).
- Ozone (O_3).
- Ammonia (NH_3).
- Lead (Pb).

Note : CO_2 is not a part of AQI.

AQI scoring :

Values of Index	Levels of Concern	Color
0 to 50	Good	Green
51 to 100	Satisfactory	Light green

101 to 200	Moderate	Yellow
201 to 300	Poor	Orange
301 to 400	Very poor	Red
401 to 500	Severe	Dark Red

Note : < 100 is tolerable AQI.

Mc Ardle's Air Quality Index :

Measures CET and takes into account Predictable 4 hour Sweat Rate (P4SR) :

- < 1 : Very comfortable.
- 1–3 : Just comfortable.
- 3–4.5 : Just tolerable.
- >4.5 : Not tolerable.

Water

00:51:46

Water requirement :

- Rural : 40 LPCD (Litres per capita per day).
- Urban : 160 LPCD (↑ due to sewage system).

Water quality parameters :

1. Physical :
   - Color : < 15 True Color Units (TCU). Ideal : <5 TCU.
   - Temperature : At room temperature.
   - Odor : None.
   - Turbidity : <5 nephalometric units. Ideal: < 1 NU.
2. Chemical parameters :
   - Chlorination.
   - Hardness.

Chlorination :

- Disinfection (Not sterlization).
- Chlorine demand : Horrock's Apparatus (Helps calculate the amount of bleaching powder required to disinfect 455 L of water).
- Chlorine estimation : Estimating free residual chlorine compounds using a chloroscope. Two methods :
  a. Ortho toluidine test (Free and combined chlorine values together).
  b. Ortho toluidine arsenate test (Free and combined chlorine values separately). It is better than Ortho toluidine test.

----- Active space -----

- MoA : Formation of hypochlorous ion (Free radicals).
- No/less effect on : Sporing organism, protozoal cysts, helminths, ova, molluscs, cyclops, cercariae, hepatitis A, and poliovirus.
- Level of chlorination in water :
  a. Normally/in drinking water : > 0.5 ppm.
  b. Impending outbreaks : >0.7 ppm.
  c. Swimming pools > 1.0 ppm.

Hardness of water :

- Types :
  a. Temporary hardness : Bicarbonate salts of calcium and magnesium.
  b. Permanent hardness : Phosphate and sulphate salts of calcium and magnesium (Non-bicarbonate sources).
- 1 mEq of hardness = 50 mg of calcium carbonate.
- Quantification of hardness :
  a. < 1 mEq hardness : Soft.
  b. 1-3 : Moderately hard.
  c. 3-6 : Hard water.
  d. >6 : Very hard water.
- Removal of hardness :
  a. Boiling.] Does not remove permanent hardness
  b. Addition of lime.]
  c. Addition of sodium carbonate.
  d. Permutit process (Base/ion exchange process).

Biological quality parameters :

- E. coli should not be present in drinking water (Indicator of fecal contamination)
- Recent contamination : Fecal streptococci
- Remote (Distant) contamination : Clostridia perfringens

Sand Filters

01:01:01

Sand filters are used in the purification of water.

Types :

	Rapid sand filter (modern)	Slow sand filter (Obsolete)
Purity	99%	99.99%
Chemical	Yes (Alum)	None

Active space

Sand size	0.4 to 0.7 mm	0.2 to 0.3 mm
Pre-filtration/ sedimentation	Yes (2 to 6 hours)	Not done
Main filtration	Sand bed	Schmutzdecke layer (zoogleal layer or vital layer)

Light

01:02:33

Important definitions and their SI Units :

Parameter	Name	Units	Other units
Brightness of point source of light	Luminous intensity	Candela	Candle power
Flow of light	Luminous flux	Lumen	-
Amount of light reaching surface	Illumination, Illuminance	Lux	Foot Candle Lumen/cm^2
Amount of light re-emitted by surface	Brightness, luminance	Lambert	Foot Lambert Candles/cm^2

Housing

01:04:43

Requirements of a pakka house :

- Cemented walls, floor, and roof.
- No cattle within 25m of house.
- Water source within 50m of house (Ideal) and not 1.5 km away.
- Ventilation type :
  a. Crossed.
  b. Mixed (Exhaust : inside → Outside + plenum : Outside → inside).
- Door + window area : >2/5th of the floor area.

Note : If water source > 1.5 km → Problem village.

Over crowding :

- When >2 persons sharing the same room are aged >9 years and of opposite gender (even if one of them is a sibling) and/or

----- Active space -----

- Room area :
  a. For 1 person < 70 m^2.
  b. For 2 people < 110 m^2.
  c. +40 m^2 for every new person.

Sewage and Waste

01:07:28

Solid waste :

- Consists of : Garbage (Organic kitchen waste), rubbish (Rubber, paper, plastic, and metal), and ash powder.
- Solid waste disposal :
  a. Dumping (most unsanitary method).
  b. Landfills : Secure landfills (m/c).
  c. Burning (most hazardous).
  d. Incineration.
  e. Inertization : Hazardous chemical waste mixed with cement.
  f. Pulverization : Shredding.
  g. Bangalore method : Layering method which acts by anaerobic digestion.
  Has multiple layers alternating between solid garbage/rubbish and sewage.

Liquid waste :

- They are of 2 types :
  a. Sewage (Black water) : Fecal matter.
  b. Sullage (Grey water) : Kitchen water.
- Liquid waste disposal : Sewage treatment plant.
  a. Ist chamber : Screening of the fecal matter → Grit chamber → Primary treatment using sedimentation.
  b. 2nd chamber : Aeration tank (Heart of the sewage treatment) → Secondary sedimentation → Sludge digestion (anaerobic) → Effluent disposal.

Note :

- Aeration tank has trickling filter, anaerobic bacteria in activated sludge killed by oxygen.
- Other methods of sewage disposal : sewage lagoon, oxidation pond/ditch.
- Oxidation pond :
  a. Upper superficial part : Aerobic digestion.
  b. Lower parts (Night time) : Anaerobic digestion.

Active space

Strength of the sewage :

Depends on biological oxygen demand (BOD) → Amount of dissolved oxygen consumed by aerobic bacterial growth on organic material present in the water sample at a certain temperature (m/c : 20° C) over a specific time period (m/c : 5 days).

BOD is quantified into :

- <100 mg/L : weak sewage.
- 100–500 mg/L: moderate sewage.
- >500 mg/L : Strong sewage.

Waste disposal :

- Borehole latrine (↓ diameter, ↑ depth).
- Pit Latrine (Better than bore hole, ↓ depth, ↑ diameter).
- Septic tank : 200 L, for 5 members, cleaned every 5 years.
- Shallow trench.
- Deep trench.
- Waste area (Secure landfills) : 1 acre per 10,000 people for 1 year.

Note :

- Borehole latrine and pit latrine are sufficient for one family for 5 years.
- m/c type of latrine in India : RCA type of sanitary latrine (Latrines which have water seal).

----- Active space -----

COMMUNITY MEDICINE REVISION 13

Levels of prevention 00:00:50

Levels of prevention	Prevents	Examples
Primordial prevention	Risk factor	Lifestyle modification, health education, sanitation, food fortification.
1° prevention (Cost effective)	Disease	Specific protection, immunization, pre-employment checkup, presumptive screening, Tuberculosis preventive therapy.
2° prevention	Complication	Early diagnosis, prompt treatment, screening for disability (Or complication).
3° prevention	Disability/death	Disability treatment/rehabilitation.

Health and disability indicators 00:05:20

Health indicators :

PQLI : Physical quality of life index.
HDI : Human developmental index.
MPI : Multi-dimensional poverty index.
GHI : Global hunger index.

	PQLI	HDI	MPI	GHI
Survival	Life expectancy at 1 year.	Life expectancy at birth.	Chances of death < 18 years.	Under-5 mortality rate.
Education	Literacy rate	Mean school years.	No. of people with < 6 years of schooling	
		Expected school years.	No. of people with education till 8^{th} class.	

Active space

Living standard/ Economic status	Infant mortality rate	Gross national income per capita. (Purchasing power parity).	Under nourishment.	Undernourishment in child under 5 yrs (Wasting and stunting).
			Low standard of living.	Inadequate food supply
Comments	Less commonly used (No weightage).	HDI = 0.63, Rank 132/191. Given by UNDP.	MPI = 0.12 (Bihar, Kerala)	GHI = 29.1 (Serious hunger) Rank 107/122.

$$\text{HDI} = \frac{\text{Actual value} - \text{Minimum value}}{\text{Maximum value} - \text{Minimum value}}$$

$$\text{GHII} = \frac{\text{Proportion of population that is undernourished (\%).} + \text{Prevalence of underweight in children under 5 yr (\%).} + \text{Mortality rate of children under age of 5 yrs. (\%).}}{3}$$

Disability indicators :

Important terms :

- Impairment : Loss of anatomical organ or physiological function.
- Disability : Loss of activity or work (d/t disability).
- Handicap : Loss of occupation or job (Social role), money or position.

DALY (Disability adjusted life years) :

- YLL (Years lost to life) + YLD (Years lived with disability).
- Most important measure for burden of disease.

QALY (Quality adjusted life years) :

- Most important measure of effectiveness of an intervention.
- Gain in quality life years with an intervention.

HALE (Health adjusted life expectancy) :

- Equivalent number of years in "full health" that a new-born can expect to live based on current rates of ill health and mortality.

----- Active space -----

- Best measure to assess the health status of a country/community.

Assessment criteria	Indicator
Overall general indicator Overall country development	IMR
Social and political development United nations indicator for nation's development	U_5MR
Overall human development Economic development	HDI
Life expectancy	HDI > HALE
Hunger, malnutrition	GHI > MPI
Overall maternal care /MCH care	MMR
Overall health care services, facilities	PNMR
Health care services utilization in public/private sector	Bed occupancy rate
Disability rate Burden of a disease	DALY
Effectiveness of intervention	QALY
Healthy life years or health status of community	HALE

PNMR : Perinatal mortality rate.

Health care delivery indicators :

- Doctor-population ratio.
- Doctor-nurse ratio.
- Population-bed ratio.
- Population per health/sub-centre.
- Population per trained birth attendant.

Utilization rates :

- Proportion of infants who are "fully immunized" against the 9 EPI diseases (1 year).
- Proportion of pregnant women who receive antenatal care, or have their deliveries supervised by a trained birth attendant.
- Percentage of the population using the various methods of family planning.
- Bed-occupancy rate (ie, average daily in-patient census/average number of beds).
- Average length of stay (ie, days of care rendered/discharges).
- Bed turnover ratio (ie, discharges/average beds).

Socio economic indicators :

- Rate of population increase.
- Per capita GNP.
- Level of unemployment.
- Dependency ratio.
- Literacy rates, especially female literacy rates.
- Family size.
- Housing : The number of persons per room.
- Per capita "calorie" availability.

Health communication, family, SES scale

00:22:30

Information and communication :

One-way : Didactic communication.

Two-way : Socratic communication.

Levels/methods of communication :

Individual	Group	Mass
• Letters. • Message. • Personal letters.	• Focused group discussion (Discussion among 6-12 members). • Panel discussion : Discussion among experts infront of audience with a moderator on a theme by experts. • Symposium : Series of lectures in front of audience by experts. • Demonstration : Best way to teach technical skill. • Conference. • DELPHI : Formal discussion among groups to solve major problems.	• Media. • Bulk mail. • Posters. • Advertisement.

GATHER → Technique to conduct interviews :

Greet → Ask → Tell → Help → Educate → Review.

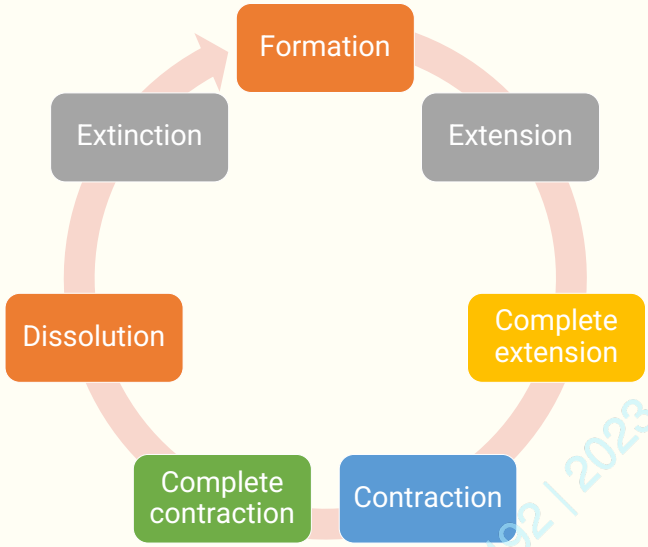
Cafeteria : Approach for family planning method, choice of contraception should be based in client.

SPIKES protocol : Method to deliver a bad news.

----- Active space -----

Family :

Family cycle :



Types of families :

	Type
Nuclear family	Children live with their parents.
3 generation family	Children live with parents and grandparents.
Joint family	All children and grandchildren live with grandparents

Socioeconomic scales :

Proposed by Tendulkar committee.

Kuppuswami scale :

- Used for urban areas.
- Indicators used : Income, occupation and education.

Uday Pareekh scale :

- For rural areas.
- Takes into account 10 variables.

BG Prasad scale :

- Based on income only.
- Common for rural and urban areas.

Disaster management

00:29:48

----- Active space -----

NDRF (National disaster response force) : Organization which takes care of disasters in India, under Ministry of Home Affairs.

Disaster management cycle :

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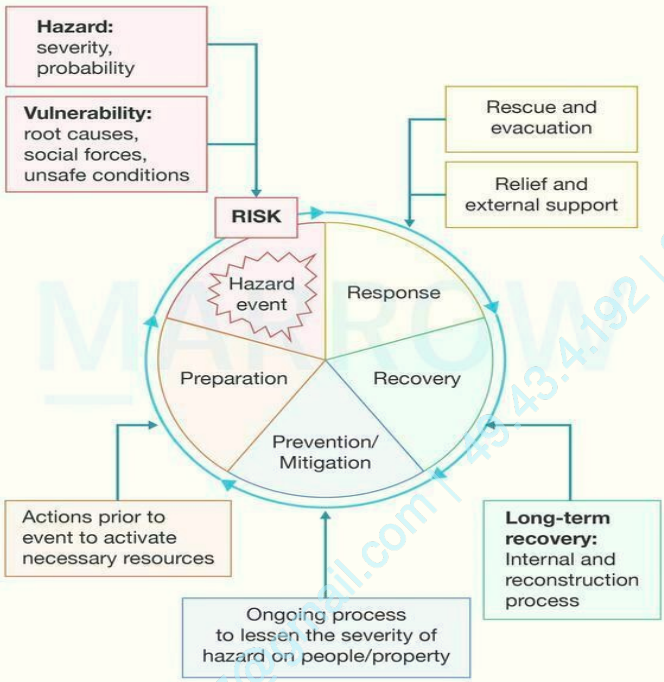


Most crucial phase : Early response phase (0-6 hrs).

Haddon matrix : To assess the level of injury prevention using tools of epidemiology.

Important points :

m/c type of disaster : Hydrological > Geological.

m/c disease post disaster : Acute gastroenteritis, diarrheal diseases.

m/c long-term sequelae post disaster : Malnutrition, undernutrition, poverty.

m/c vaccine preventable disease outbreak : Measles

Vaccine for health professionals after a disaster : Hep B and Tetanus toxoid.

Note : The general population need not be vaccinated post a disaster.

----- Active space -----

Triage :

To segregate based on urgency.

Tag colour	Characteristics
Emergency	Pt requires immediate treatment.
Urgent	Pt is stable at the moment and is not in any immediate danger, but will require observation.
Routine	Pts who will require medical treatment at some point, once more critical injuries have been treated.
No life	For those who are already deceased, or for patients whose injuries are so extensive that they will not be able to survive, given the level of care available.

International health

00:35:45

World health organization :

- Established on : 7th April, 1948.
- Headquarters : Geneva, Switzerland.
- Functions : Prevention and control of any disease in the world, health and family planning and research.
- Has 194 member states.
- Headquarters of South East Asia region is situated in New Delhi, India.

Organisation	Headquarters	Major functions	Assistance in India
United Nations	New York, US	World peace (Includes WHO)	World bank, UNICEF
UNICEF (United national international children emergency fund)	New York, US	GHI indicator, USMR	MCH programs, UIP, ICDS, IMNCI and child health.
FAO (Food and agricultural organisation)	Rome, Italy	-	Food, nutrition and ↓ malnutrition
UNDP (UN development program)	New York, US	Planning of resource, human development, research, data, HDI.	
USAID	Washington DC, USA	-	Family planning, TB program, AIDS program.

----- Active space -----

Organisation	Assistance in India
Rockefeller foundation	Est. All India institute of hygiene and public health, Kolkata. Rural health, toilets and sanitation.
Ford Foundation	National Institute of Health Administration and Education (NHAE) at Delhi. Drainage system in Kolkata.
World Bank	All national programs
Swedish International Development Agency (SIDA)	Assisting TB program
Danish International Development Agency (DANIDA)	Blindness program, NLEP, TB program.
Colombo plan	AIMS (NZ), cobalt therapy unit (can).

Notifiable diseases for outbreak (6) :

- Cholera : Only disease where not every case is reported, Cholera outbreak has to be reported < 24 hrs to WHO.
- Yellow fever.
- Plague.
- Influenza.
- Polio.
- COVID-19.

Biomedical waste management

00:40:27

Under Ministry of Environment, Forest and Climate change, take care biomedical waste by Central Pollution Control Board.

Not covered under biomedical waste :

Waste	Covered under
Solid waste	Solid waste management rules, 2016.
E waste	E-waste (management) rules, 2016.
Radioactive wastes	Atomic energy act, 1962.
Hazardous chemicals	Hazardous chemicals rules, 1989.
Construction and demolition waste	Construction and demolition waste management rules, 2016.

----- Active space -----

Lead acid batteries	Batteries (management and handling) rules, 2001.
Hazardous wastes	Hazardous and other wastes (management and transboundary movement) rules, 2016.
Hazardous microorganisms, genetically engineered microorganisms and cells	Manufactured, use, import, export and storage of hazardous microorganisms, genetically engineered microorganisms or cells rules, 1989.

Biomedical waste :

Category	Type	Disposal
Yellow	Infectious, laboratory.	Incineration
Red	Rubber, plastic, tube.	Recycle, return, re-use (R3).
Blue	Broken glass, metallic ortho implants.	R3
White	Sharps, metals.	R3.

Yellow category :

A. Human waste.

B. Animal waste.

C. Soiled waste : Dressing waste, cast, plasters (blood stained).

D. Discarded medicines : Cytotoxic drugs.

E. Chemical waste.

F. (Fluid) Liquid chemical waste : X-ray developing fluid, Body secretions (urine, sputum, CSF, peritoneal tap, no blood), floor cleaning fluid.

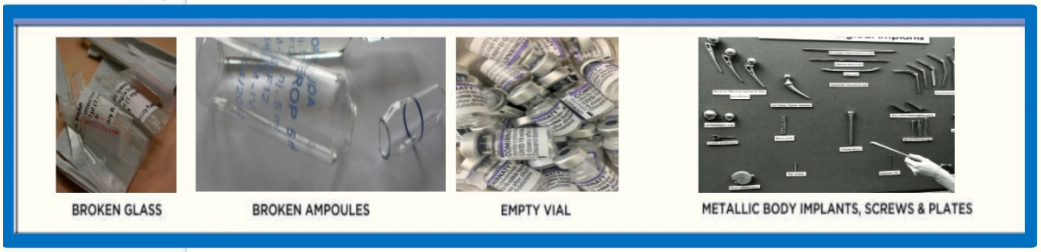
G. Gown, linen, bedding.

H. Microbiological, laboratory, biotechnological : Blood, blood products and blood bags, vaccutainer with blood.

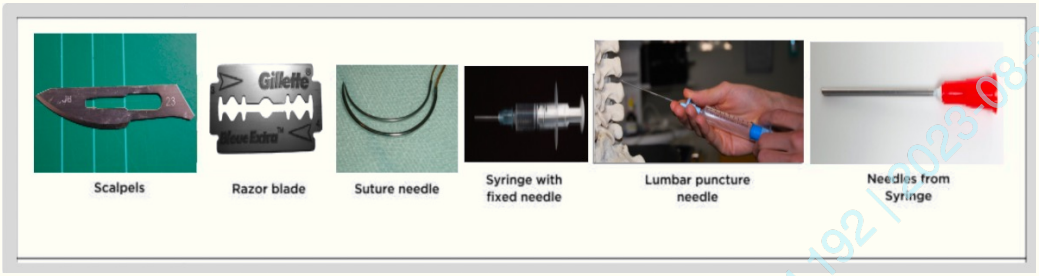
No pre-treatment before discarding is required except for F, G and H.

Red category :

Blue category :



White category :



Note :

- Vacutainer
  - Empty : Red.
  - Used : Yellow.
- Needle
  - Generally : Red
  - Fixed needle : White

Bags/bins :

Category	Bag/bins
Yellow category	Non-chlorinated bag. Plastic of bag > 0.5 micron. 2 types : Bag with claw symbol for BMW, Cytotoxic waste bag C.
Red category	Bag
Blue category	Cardboard box/plastic bin.
White category	Puncture proof translucent bin.

Occupational health

00:50:52

Pneumoconiosis :

Range of dust particles :

Size	Significance
5–10 micron	Lodges in upper respiratory tract → URTI.
3–5 micron	Lodges in lower respiratory tract → LRTI.
1–3 micron	Can enter into alveoli → Alveolitis.

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Types of pneumoconiosis :

Disease	Partical	Source
Silicosis	Silica	Sand stone, granite, pottery and ceramic industry, gold, mica and steel industry.
Asbestosis	Asbestos	Asbestos cement factory, fireproof textiles.
Siderosis.	Iron	Iron ores and mines, iron and steel industry.
Anthracosis (Black lung)	Coal dust	Coal mines.
Baritosis	Barium	Photography, printing, barium diagnostic works.
Byssinosis	Cotton dust	Textile industries.
Bagassosis	Sugar cane dust (Bagasse)	Cane sugar factories, paper and card-board factories. Thermoactinomyces sacchari inhalation → mottling of lung.
Farmers lung	Mouldy hay (Grain dust)	Agricultural industry. Mouldy hay : Micropolyspora faeni.

Silicosis Vs Asbestosis :

	Silicosis	Asbestosis
Cause	Silica dust	Asbestos fiber
Affects	Upper 1/3rd lung	Lower 1/3rd lung
Pathology	Alveolitis → Nodular fibrosis.	Bronchitis → Diffuse inflammatory response.
X-ray	Snow storm appearance	Ground glass appearance
Association	TB	Pre-malignant, M/C cancer → Bronchial cancer, mesothelioma has strong association.

Harmful chemicals :

Chemicals	Disease
Benzene, Ethylene Oxide	Leukemia
Beryllium, Cadmium, Chromium, Radon, Silica, Ionizing radiation, Nickel.	Lung cancer
Arsenic	Skin, lung, liver cancer
Benzidine	Bladder cancer

PAH	Skin, scrotum and lung cancer
Vinyl chloride	Liver cancer
Wood dust, Nickel, Chromium	Nasal sinus problems

----- Active space -----

Thermal injuries :

Heat stroke	Heat hyperpyrexia	Heat exhaustion	Heat cramps	Heat syncope
Heat regulation failure	Heat regulation impaired	Water and salt imbalance	Serum sodium and chloride imbalance	Vasodilation, pooling of blood
Very high body temperature (> 106° F)	High body temperature (> 103° F)	High body temperature (100° F-102° F)	Muscular spasms	Hypotension, collapse
Rapid cooling in ice water	Ice water	Fluid electrolyte replacement	Fluid electrolyte replacement	Self recovery : Cool shade.

Entomological diseases :

Louse born	Flea born	Tick
• Relapsing fever (B.recurrentis). • Epidemic Typhus (Rickettsia Provazekii). • Trench fever (Rickettsia Quintana).	• Plague. • Endemic Typhus/ murine Typhus (Rickettsia Typhi). • Chiggerosis.	• Tick typhus. • Tick paralysis. • Tularemia. • Viral fever. • Hemorrhagic fever. • Encephalitis. • Babesiosis

Plumbism :

Caused by Lead toxicity.

Industries : Battery, automobile, paint and toy industries.

Route of intoxication : M/C is inhalation, in children d/t ingestion.

Clinical features :

- Burtonian lines : Bluish lines on gums.
- Neuropathies : Foot drop, wrist drop.
- Encephalopathy, memory loss.
- Abdominal colic : Also called painter's colic.
- Anemia, weakness.

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Management :

Screening test :

- Test of choice : Urinary ALA levels.
- Other test : Coproporphyrin levels.

Diagnostic test : Blood lead levels, > 70 mg/L.

Treatment : Chelation using BAL or EDTA.

Factories Act

01:02:05

Established in 1948.

No child can be employed for age < 14 years, safe-guarded under Article no. 24.

Employment of children of tender age (15-19 yrs), given appropriate work :

- No night-duty/overtime.
- One extra leave per 14 days.
- No work associated with hazardous chemicals or machines.

Allowable hours per week : 48 hrs.

Allowable overtime : 2 hrs/ day.

Maximum hours of work per week : 60 hrs.

Facilities to be provided based on no. of employees :

No. of employees	Facilities
> 50	Creche
> 250	Canteen
> 500	Welfare officer
> 1000	Safety officer

COMMUNITY MEDICINE REVISION 14

----- Active space -----

National programmes

00:00:25

1. NLEP : National Leprosy Eradication Programme

Paucibacillary leprosy → Mx : 3 Drugs x 6 months

Multibacillary leprosy → Mx : 3 Drugs x 12 months

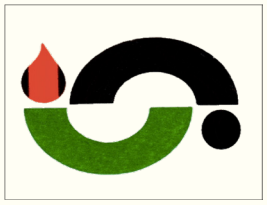
Chemoprophylaxis : Single dose Rifampicin

2. IDSP : Integrated Disease Surveillance Programme

3 components :

- S : Syndromic surveillance
- P : Probable case surveillance
- L : Laboratory surveillance

3. CRS : Civil Registration System



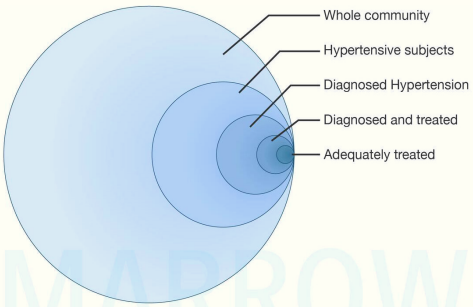
Birth registration → Both registration should be completed within 21 days

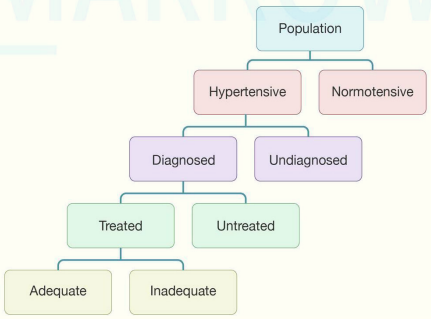
Death registration → Both registration should be completed within 21 days

4. NPNCD : National Programme for Non Communicable Diseases

A. Blood pressure/systemic hypertension

- Tracking of blood pressure :
  a. Done in children.
  b. Primary level of prevention.
  c. To maintain BP in normal range.
- Rule of halves : To determine the proportion of people with adequate BP control.





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- Prevention of hypertension

DASH : Dietary Approach to Stop Hypertension.

- Physical exercise : Atleast 30 min/day x 5 times/week
- Salt intake : <5 gm/day
- Saturated fatty acid : <10% of total dietary intake

B. Obesity :

- Waist hip ratio : <0.9 : Males; <0.85 : Females
- Waist circumference : <102 cm : Males; <88 cm : Females
- BMI : Normal range → 18.5 – 22.9
- Corpulence index = $\frac{\text{Actual weight}}{\text{Desired weight}}$ Normal : < 1.2

5. NQAS : National Quality Assurance Programme

- LaQshya : To assure Labour room quality.
- MusQan : Child friendly public health care facility.
- SaQushal : Safety and quality assessment of health facilities.
- Mera Aspataal : IT platform to capture voice of the patients.

6. ICDS : Integrated Child Development Services

- Scheme under Ministry of women and child development.
- 1 Anganwadi : 400 – 800 population.
- Block level programme.
- Supplementary nutrition : 0– 6 yrs : 500 calories/day; Adolescent girls; Pregnant women : 600 calories/day; Lactating mother

7. POSHAN : Pradhan Mantri Overarching Scheme for Holistic Nourishment

- Under Ministry of Health and family welfare.
- Target : Decrease LBW : 2%/year; Decrease anemia : 3%/year

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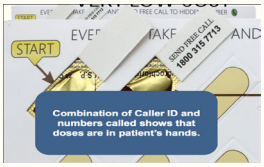
8. PMJAY : Pradhan Mantri Jan Arogya Yojana

- 5 petals : Indicate 5 lakh Rs given to 10 crore families.

9. 99 DOTS



- Mobile based compliance system.
- Reminder for patients to take TB treatment.

10. NTEP : National Tuberculosis Elimination Programme

- Universal CBNAAT : Of every TB case (To assess Rifampicin status).
- Target : To Eliminate TB by 2025.
- TB preventive therapy
  - 6 months Isoniazid
  - 3 months Isoniazid + Rifapentin
- Case detection
  - Active case detection → Among high risk areas
  - Passive case detection → via TB centres
  - Intensified case detection → Screening TB in people with other comorbidities

11. NIDDCP : National Iodine Deficiency Disorder Control Programme

- Under Ministry of Industries and commerce.
- Target : Goitre rate < 5 % (Through salt iodization).
- Urinary iodine excretion (Principal impact indicator) : Important indicator in NIDDCP.

12. NFPP : National Family Planning Programme.

Targets :

- CPR (Couple protection rate) : > 60 %
- TFR (Total fertility rate) : < 2.1
- NRR (Net reproduction rate) = 1

CAFETERIA approach : Choice of contraceptive depends on the client.

13. INAP : India Newborn Action Plan

Target :

- Single digit Neonatal mortality rate (<10)
- Single digit Still birth Rate (<10)

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14. PMSMA : Pradhan Mantri Surakshit Matritva Abhiyan

ANC screening : Color based screening.

- Red : High risk pregnancy.
- Blue : Pregnancy induced hypertension.
- Yellow : Comorbidities (DM, STI, hypothyroidism).
- Green : No risk factors.

15. PMMVY : Pradhan Mantri Matru Vandana Yojana

- Under Ministry of women and child development.
- Cash incentive of 5000 Rs : 3 installments.

After
- Early ANC
- Institutional delivery with complete ANC
- Child receives 1 st dose of vaccination

16. RKSK : Rashtriya Kishore Swaasthya Karyakram

- Both girls and boys of age grp 10–19 years.
- Saathiya approach → Peer to peer or friend to friend approach.

17. SAANS : Social Awareness and Actions to Neutralize pneumonia Successfully

- Launched : 12 November (World Pneumonia Day).
- Objective : ↓ Pneumonia related death < 3/1000 by 2025.
- Use clean fuels for cooking under Ujwala scheme.

Miscellaneous images

00:15:46

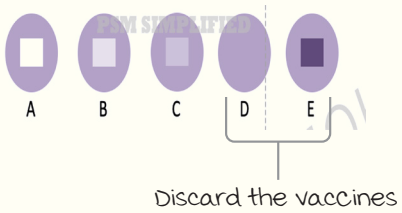
1. Rat flea : Xenopsylla cheopis

- Transmits plague.
- Wingless ectoparasite.
- Indicator : Cheopis index.

----- Active space -----

2. VVM : Vaccine vial monitor

- Chemical indicator (Found inside the square).
- Ideal temperature for vaccine : 2–8 °C.
- Open vial policy : Opened vaccines can be used upto 28 days, if temperature is maintained.
- Exceptions : BCG, Mumps, Rubella, COVID 19.



3. Argemone mexicana

- Toxin : Sanguinarine.
- Disease : Epidemic dropsy.
- Clinical features : Glaucoma, CHF, pedal edema, diarrhoea, pleural effusion.

4. Cu 375 Multiload device

- Applicable for 3–5 yrs.
- Short term IUCD.
- Thread : Nylon (Less chance of expulsion).

Instruments and charts

00:18:18

1. Harpenden's caliper

- Measure skin fold thickness (Obesity indicator).
- Add skin fold thickness of :
  - Biceps
  - Mid triceps
  - Subscapular
  - Suprailiac

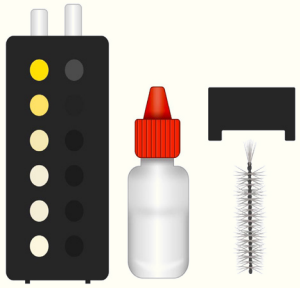
  → < 50 mm : Girls
  → < 40 mm : Boys

2. Chloroscope

- Reagent used : Ortho toluidine.

Note :

1. Ortho toluidine : Measures free and combined chlorine together.
2. Ortho toluidine arsenate test : Measures free and combined chlorine separately.



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- Horrocks apparatus : measure chlorine demand (Amount of bleaching powder required for 455 L of water).
- Main principle of chlorination : Hypochlorous ions.
- Chlorination levels :
  - Drinking water : > 0.5 ppm
  - Impending outbreak : > 0.7 ppm
  - Swimming pools : >1 ppm
- Water quality : Assessed by MPW (Multi purpose worker male).

3. Globe thermometer

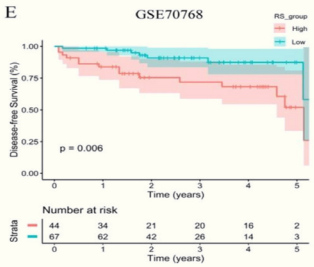
Measures radiant heat

4. Kata thermometer

Measures cooling power of air & air velocity

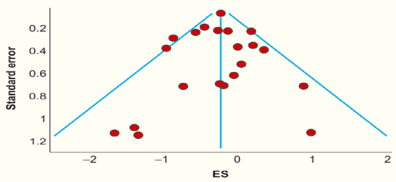
5. Kaplan meier survival analysis

- Step ladder pattern : Denotes prognosis.



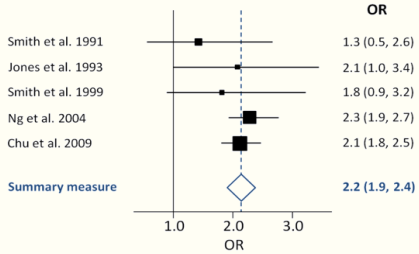
6. Funnel plot

- Find publication bias.



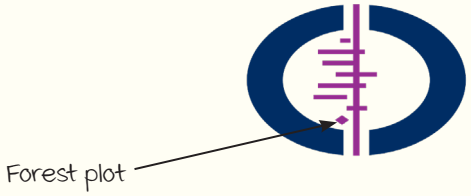
7. Forest plot/Box and whisker plot

- Made in meta analysis.
- Calculate median of the median of different studies.
- Used in evidence based medicine.



8. Cochrane

- Collection of evidence based medicine.
- Collection of systematic reviews.



Forest plot

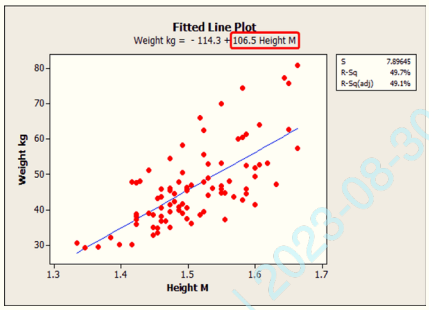
9. Regression analysis

Types of regression :

Linear regression	Logistic regression
Univariate	Univariate
Multivariate	Multivariate

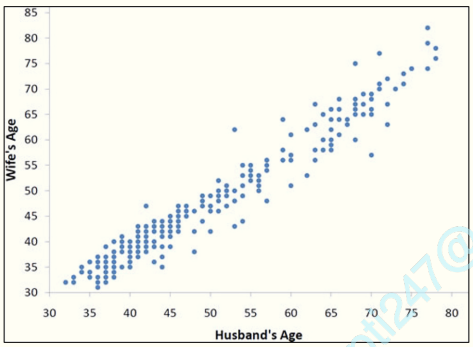
Univariate linear regression : $y = a + bx$.

- y → Regression coefficient
- a → Constant
- b → Slope of the curve
- x → Variable

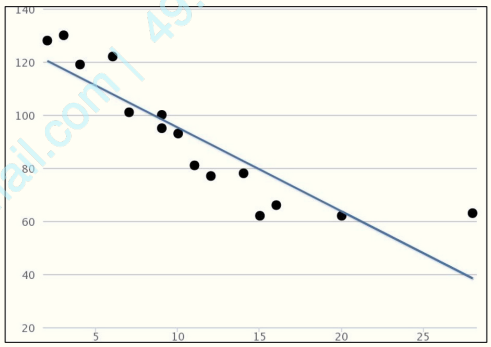


10. Scatter plots

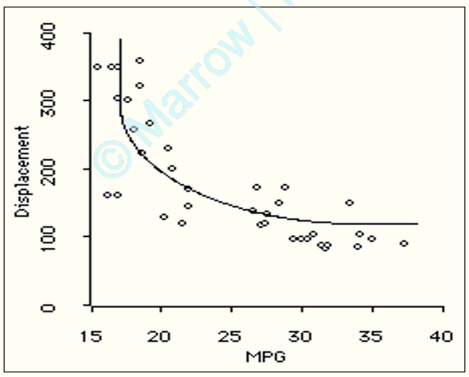
- r → Pearson correlation coefficient



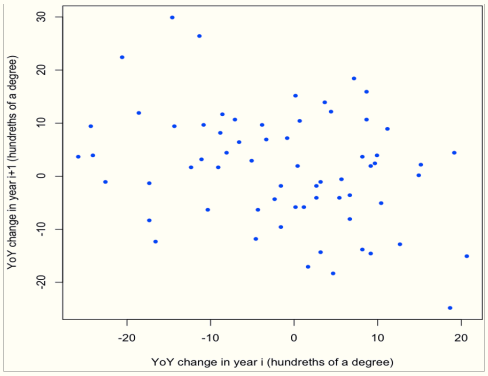
Positive correlation r= +1



Negative correlation r= −1



Semilinear or curvilinear correlation



No correlation