PSM Booster

V9 - April 2025

MUKHMOHIT SINGH

- PSM Pearls
- Recent Advances
- Updates
- Important tables
- High yield facts
- Must remember points

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By Mukhmohit Singh

INDEX

Disclaimer – This document is only intending to serve as LAST Minute revision in PSM for most essential points to remember for the PG entrance Exams in India and FMG screening test.

Due credits to the various online resources for National health programs, NHM, MoHFW, Govt. of India. The sources, references have been taken from recent guidelines, reports, public access data from various agencies and websites for information dissemination among students and we do not endorse upon any content. The reader should check the validity / authenticity of the data before citation at different platforms. The data and content is also adapted from the classes by Dr Mukhmohit Singh and may change or vary as the policies or guidelines change.

New Schemes and Recent Updates

Public Health Updates – Health care system of India

- **Target** – 2.5 % of GDP for health care spending
- **PM Swasthya Samagra Mission** – New name for National health mission
- **Ayushman Aarogya Mandir** (or health and wellness centres) – New name for existing centre government run subcenters
- **Ayushman Vay Vandana cards** – for 5 lac Rs health coverage now extended to all senior citizens (age more than 70 years)
- **ABHA ID** – Universal Aadhar linked ID for digital health care ecosystem
- **Urban PHC Polyclinics** – Proposal to establish Multispecialty – UrbanPHC (details in next page)
- **Sugamya Bharat Abhiyaan** – promote accessible India Campaign
- **IPHS 2022** (Indian Public Health standards recommendations) **Beds at health centres**:
  - PHC – 6 indoor beds for 20,000-30,000 population
  - CHC (and FRU CHCs) – 30 – 100 beds for 80,000 – 1,20,000 population
  - Sub-district hospitals – 50 – 100 beds for 1 lac – 5 lac population
  - District hospital > 100 beds and Proposed recommendation of 2 beds / 1000 population.
- **NTEP update:** 1000 INR per month for nutritional support, given to patients of TB under treatment, as per revised NIKSHAY POSHAN Yojana
- **NLEP Update:** One nerve involvement is now classified as multibacillary leprosy
- **PM Matru Vandana yojana** – under the ministry of women and child development, revised payment of 5000 INR in two installments for first born child.
- **Mission Shakti** launched by MoWCD (women and child development) for women empowerment
  - **Sambal Scheme** – for safety and security of females
  - **Samarthya scheme** – for women empowerment (Matru Vandana, Ujjawala scheme)

- **For LF elimination by 2027** – Biannual Mass drug administration with three drugs – DEC, albendazole and ivermectin, is given in the LF endemic districts
- **NACP – 95-95-95-95 strategy implemented** (previous year MCQ)
- Incentive in PM Matru Vandana yojana (PM-MVY) in mother and childcare is updated

Vaccine Updates in Recent News:

- **CERVAVAC vaccine:** Indian made, Quadrivalent vaccine for strain 6,11,16,18
  - Age 9 – 26 years, two doses 6 months apart
- **ROTAVAC** is Rota Virus vaccine and OPEN VIAL policy is applicable on it (means it can be used till 28 days after opening the vial, provided it has not expired and maintains cold Chain)
- **fIPV-3** dose stared under NIS (previous year MCQ)
- **IXCHIQ vaccine** approved for chikungunya prevention
- **JE killed vaccine** incorporated under NIS, given as 0.5ml IM, Left Anterolateral thigh
- **R21 – plasmid vaccine** is new malaria vaccine approved by FDA

Latest Health and Disability Indicators:

DALY	Disability adjusted Life years	Includes "years **lost to life"** and "Years **lived with disability"**	Best indicator for **burden of disease**
HALE	Health adjusted **life expectancy**	Number of years spent in good health, **free from disease or disability**	Good indicator for health status of population, **Healthy Life Expectancy**
QALY	Quality adjusted life years	Number of **quality life years gained** with an intervention	Indicator for efficiency / **effectivity of an intervention**

Health And Development Indicators

INDEX	**PQLI**	**HDI**	**GHI**	**MPI**
	Physical Quality of Life Index	Human development index	Global Hunger Index	Multidimensional Poverty Index
Sub-indicators	• LE at 1 year • Literacy rate • IMR	• LE at birth • Mean school years • Expected school years • Gross national income	• U5 MR • Undernutrition • wasting • stunting • Inadequate food supply	1. Health – nutrition, child mortality 2. Education - years of schooling, school attendance 3. Standard of living: cooking fuel, sanitation, water, electricity, housing, assets
Current level	Old indicator	0.64, Rank 134 out of 193 countries (2024)	27.3 (serious Hunger). Rank 105 out of 127 countries, (2024)	0.069, India Ranks 126 out of 143 countries (2024)

2. Health care system of India

- Health and Wellness Centres (Sub-centres and PHCs), in both rural and urban areas will provide primary care services.
- Multispecialty polyclinics nearer to the community will provide ambulatory specialist services, particularly in urban areas.
- CHCs in rural areas can be either non-FRU or FRU depending on the range of services provided. In urban areas, CHCs will provide services at par with FRU.
- District and Sub-district hospitals will provide secondary care services.

ICDS	National Health mission		
	NUHM	NRHM	
	District hospital		All specialists, Tertiary level care, program managers
Child development project officer (100,000)	Urban CHC (2.5 lac – cities 5 lac – metro cities)	Community health centre (80,000 – 1,20,000)	Basic specialist care + OT technicians, Lab technicians, ANM, Nurses
MukhyaSevika / Anganwadi supervisor (25,000)	U-PHC (50,000)	Primary health centre (20,000 – 30,000)	Medical officer, Pharmacist, ANMs, Lab technician, Health assistant
	ANM / MCH Centre (10,000)	Sub health centre (3000 – 5000)	Multi-purpose worker - Male, MPW - Female
Anganwadi worker (500-800)	USHA workers (200 – 500 households)	Village level (1000)	ASHA worker (Accredited Social health activist)

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Urban PHC – Polyclinic

- *The multispecialty UPHC (polyclinic) is established* ***for 2.5 – 3 lac population****. It will provide UPHC services and would ALSO provide day care/ ambulatory specialist care services*
- ***Fixed day rotational multispecialty OPD for a minimum of six specialties****, viz. Medicine, Obstetrics & Gynecology, Pediatrics, Ophthalmology, Dermatology and Psychiatry would be provided at the polyclinic. (plus any other specialty as per needs and availability of specialist)*
- *Polyclinic should plan and provide oral, physiotherapy and/or optometrist services also, as per local requirement.*
- ***Diagnostic services for all the specialties*** *concerned along with point of care testing should be made available at polyclinic.*

National Quality assurance Guidelines - 2018

- Kayakalp awards - for better hospital administration and patient satisfaction
- swach swasth sarvatra - clean and safe drinking water
- **LaQshya** - Quality of care during delivery and post-partum
- **Mera Aspataal** - IT platform to capture voice of patients - to improve quality
- AEFI surveillance platform
- **MusQan** - child friendly public health care facilities
- **SaQushal** - safety and quality assessment for Health facilities

Historical Committees in Public health

1946	Bhore committee - setting of Health care system in India
1962	Mudaliar committee – starting "Indian Medical Services" in basis of IAS
1963	Chadha committee - Basic health worker, integration of malaria program with other health care programs
1965	Mukherjee - disintegration of family program and malaria program, strengthening of Family planning program
1967	Jungalwalla - nonpractice allowance, equitable salary as per work and job functions
1973	Kartar Singh - multipurpose worker scheme
1975	Shrivastava - re-orientation of medical education, referral systems in public health care system
1986	Bajaj- financial, manpower norms
2002	NHP (national health Policy) - integration of health care services

- Tendulkar committee and Rangarajan committee worked for establishing the Below poverty line criteria
- Bhore committee is known for the 3 million plan

3. National Health Programs – Overview and Update

Mental Health Program

- Ministry of Health and Family Welfare (MoHFW) in 2022,
- Goal of **reducing suicide mortality by 10% by 2030.**
- Integrated into Ayushman Bharat Health and wellness centres for primary level care and support in mental health
- **KIRAN helpline** – for mental health support services
- High risk populations: students, farmers, and young adults, the strategy ensures targeted intervention to prevent self-harm and improve overall well-being.

District Mental health Program:

- Covers 767 districts
- Provides counselling, outpatient services, suicide prevention programs, and awareness initiatives.
- 10-bedded inpatient mental health facilities at the district level.

Tele MANAS scheme –

- Launched on **10 October 2022** - 24x7 mental health
- Tele-counselling by trained professionals
- Referral support to psychiatrists for severe cases.
- Mental health awareness campaigns via digital platforms.
- Mobile-based mental health interventions, ensuring accessibility in rural and remote areas

National Vector Borne Disease Control Program

6 diseases – Malaria, Dengue, Kala Azar, Lymphatic filariasis, Japanese Encephalitis, Chikungunya

	Vector	Investigation	Treatment	Chemo-Prophylaxis	Vaccine
Malaria	Anopheles	Peripheral blood smear	• Chloroquine • Primaquine • Artemether combination therapy	• Doxycycline • Mefloquine	• R21- plasmid vaccine • RTS,S ASO1 mosquirix vaccine
Dengue	Aedes	NS1 Ag and IgM Elisa	IV Fluid rehydration	-	Dengvaxia vaccine
Chikungunya	Aedes	IgM or RTPCR	IV Fluid rehydration	-	Ixchiq vaccine
Lymphatic filariasis	Culex, Mansonia	Peripheral blood firm DEC provocation test	(DEC) Diethylcarbamazine	DEC + Ivermectin + Albendazole	-
Japanese Encephalitis	Culex	RT PCR	Symptomatic	-	• SA-14-14-2 live vaccine • Kolar strain – killed vaccine
Kala Azar	sandfly	RK 39	• Liposomal amphotericin B • Miltefosine	-	-

Malaria Treatment Regimes

Plasmodium Vivax	Plasmodium Falciparum		MIXED Infection
	in Northeastern states	In all other states	
Chloroquine (25mg/kg total dose) x 3 days **And** Primaquine (0.25mg/kg) x 14 days	Artemether (20mg) + Lumefantrine (120 mg) **And** Primaquine (0.75mg/kg) on day 2	Artesunate (4mg/kg) x 3 days. + Sulphadoxine (25 mg/kg) on day 1. + Pyrimethamine (1.25mg/kg) on day 1 **And** Primaquine (0.75mg/kg) on day 2	Region specific ACT **And** Primaquine (0.25mg/kg) x 14 days

- Vivax Malaria in Pregnancy – Chloroquine for 3 days
- Falciparum Malaria in 1st trimester Pregnancy – quinine salts for 3 days
- Falciparum Malaria in 2nd or 3rd trimester Pregnancy – Area specific ACT for 3 days
- **Note** – Primaquine is contraindicated in pregnancy, infants and G6PD

Mosquitos and diseases

Anopheles	Aedes	Culex	Mansonia
Malaria	Dengue, chikungunya, yellow fever	Japanese encephalitis, Lymphatic filariasis	Lymphatic filariasis
• Clean stagnant water • **Eggs** - Single, boat shape with lateral floats • **Larva** - No siphon, near to surface of water • **ADULT:** • Resting - Inclined position • Bite - morning, evening • Flight - 2-3 kms • Spots on wings	• Artificial stored water • **Eggs** - single, cigar • **Larva** – bottom feeder with siphon • **ADULT:** • Resting-parallel to ground • Bite - daytime • Flight-100 – 200 metres • Stripes on body and legs	• Dirty polluted water • **Eggs** - Cluster, rafts • **Larva**- bottom feeder with siphon • **ADULT:** • Resting-hunch back • Bite- midnight • Flight - 11 - 12 kms • Brown color, big wings	• Large water body with aquatic vegetations - Pistia or water hyacinth plant • Eggs - Cluster, star shaped • Larva- attach to roots of plant with siphon • ADULT: • Resting - squatting • Bite- evening • Flight - 2-3 kms • Large body, long legs

National AIDS control Program

- **95 – 95 – 95 – 95 strategies**
  - 95% Case detection, 95% of cases should be on treatment, 95% of treated cases should have decrease in viral load **AND** 95% of individuals should have a good quality of life
- **Sampoorna suraksha Kendra** – for HIV and RTI/STI treatment
  - **Comprehensive TB and hepatitis diagnosis** and management
  - Link ART centres for all cases with **PrEP counselling** and medications
  - Elimination of **HIV and syphilis vertical transmission**
  - **8 Syndromic Kits** – recent update of kit 8, brown color *(detail shared next page)*
- U=U Campaign (Undetectable viral load = Untransmittable) - For Global HIV prevention and control
- **Follow up** schedule for **cases of HIV on ART**
  - Clinic monitoring, Treatment adherence, TB screening – every visit
  - Lab evaluations, NCD screening, CD4 count - 6 monthly
  - Viral Load – 6 months, 12 months and every year
- **Follow up** Schedule for **PEP cases** for HIV prevention
  - Week 2 and 4 for CBC for evaluating drug interactions
  - Week 6, 12, 24 for HIV antibody assessment

Protocol for prevention of mother to child transmission:

1. Give NVP or NVP with zidovudine
2. Check for HIV after 6 weeks of prophylaxis.
3. Investigation of choice is HIV TNA RT PCR
4. Promote breastfeeding
5. All due vaccines to be given as per age of the child

HIV risk status	Option for ARV prophylaxis
Low Risk infant - mother with suppressed plasma viral loads (<1000 copies / mL) – assessed anytime after 32 weeks of pregnancy	**Syr. Nevirapine for 6 weeks** Syr. Zidovudine – ONLY if ▪ mother is with both HIV1 and HIV2 infection ▪ mother received NVP based regime in pregnancy
High Risk infants ▪ mother not on ART ▪ viral load NOT done in mother ▪ viral load > 1000 copies in mother ▪ newly infected / diagnosed mother within 6 weeks of delivery	**Dual prophylaxis** **Syr. Nevirapine + Zidovudine** - Exclusive breastfeed - till 12 weeks - Exclusive replacement feed - till 6 weeks

Updates in Syndromic Mx

- Dosage of Cefixime is increased from 400 mg to 800 mg in kit 1,6
- Duration of Doxycycline 100 mg BD for 15 days is changed to 14 days
- Kit no 7: 2 changes; indication : inguinal bubo and LGV proctitis added, Tab Azithromycin deleted from previous kit 7
- Kit no 8: Brown for anorectal discharge added

RECENT UPDATES - SYNDROMIC KITS MMFC 3012

Kit	Composition	Targetted Syndrome
Kit – 1 (Grey)	Tab. Azithromycin 1000 mg and Tab. Cefixime 800 mg single dose	➢ Urethral Discharge Syndrome ➢ Vaginal Discharge Syndrome (for cervicitis) ➢ Painful Scrotal Swelling ➢ Presumptive treatment (PT)
Kit 2 (Green)	Tab. Secnidazole 2000 mg and Tab. Fluconazole 150 mg single dose	• Vaginal Discharge Syndrome (for vaginitis)
Kit 3 (White)	Inj. Benzathine penicillin G 2.4 MU and Tab. Azithromycin 1000 mg single dose Disposable syringe 10 ml with 21-gauge needle and Sterile water 10 ml	• Genital Ulcer Disease Syndrome (for Syphilis and Chancroid)
Kit 4 (Blue)	Tab. Doxycycline 100 mg (28 capsules as twice/day dose for 14 days) and Tab. Azithromycin 1 g single dose	• Genital Ulcer Disease Syndrome (for Syphilis and Chancroid when unavailability or history of allergy to BPG)
Kit 5 (Red)	Tab. Acyclovir 400 mg (21 tablets as three times/ per day dose for 7 days)	• Genital Ulcer Disease Syndrome (for Herpetic Ulcers)
Kit 6 (Yellow)	Tab. Cefixime 800 mg single dose and Tab. Metronidazole 400 mg (28 tablets as twice/day dose for 14 days) and Cap. Doxycycline 100 mg (28 capsules as twice/ day dose for 14 days)	• Lower Abdomen Pain • PID
Kit 7 (Black)	Tab. Doxycycline 100 mg (42 capsules as twice/day dose for 21 days)	• Inguinal Bubo under Genital Ulcer Disease Syndrome • LGV Proctitis under Anorectal Discharge Syndrome
Kit 8 (Brown)	Tab. Cefixime 800 mg STAT dose and Tab. Doxycycline 100 mg (14 capsules as twice/ day dose for 7 days)	• Anorectal Discharge Syndrome

Post Exposure Prophylaxis:

- Regime – TLD – Tenofovir, lamivudine, dolutegravir
- To be started within 72 hours (best is < 2 hours)
- Continue the TLD regime for 28 days

Pre-Exposure Prophylaxis:
Emtricitabine + tenofovir

Exposed Person	Preferred Regimen for PEP Drugs and Dosages	Alternate Regimen (If the Preferred Regimen is not available or Contraindicated)
Adolescents and Adults (>10 years of age and >30 kg weight)	Tenofovir (300 mg) + Lamivudine (300 mg) + Dolutegravir (50 mg) (FDC: One tablet OD)	Tenofovir (300 mg) + Lamivudine (300 mg), (FDC: One tablet OD) + Lopinavir (200 mg)/Ritonavir (50 mg) (two tablets BD), OR,Tenofovir (300 mg) + Lamivudine (300 mg) + Efavirenz (600 mg), (FDC: One tablet OD)
Children (>6 years of age and >20 kg weight)	Zidovudine + Lamivudine (Dosage as per weight band) + Dolutegravir (50 mg) (One tablet OD)	If Hb <9 g/dl: Abacavir + Lamivudine (dosage as per weight band) +, Dolutegravir (50 mg), (One tablet OD)
Children (<6 years of age or <20 kg weight)	Zidovudine + Lamivudine + Lopinavir/ritonavir (Dosage as per weight band)	If Hb <9 g/dl: Abacavir + Lamivudine + Lopinavir/ritonavir (Dosage as per weight band)

- The first dose of PEP should be administered immediately (within 2 hours) and preferably within 72 hours of exposure.
- Healthcare personnel should be counselled about the safety of the PEP drugs.
- Duration of PEP is 28 days, regardless of PEP regimen.

4. Mother and Child Health Program –

- RMNCAH+N – Reproductive female, mother, neonate, Child, adolescent health and Nutrition

Facility Based New-born care

- **NBCC – Newborn care corner** - Located within delivery room, for immediate care of newborn
- **NBSU – Newborn stabilization unit**
  - Function: for sick and LBW babies can be cared and managed for short durations
  - Criteria – All FRU / CHC's are with NBSU
  - Infrastructure: 4 beds + 2 beds for rooming-in
- **SNCU – Special Newborn care units:**
  - Provide special care to newborn (except assisted ventilation and pediatric major surgery)
  - Criteria: More than 3000 deliveries per year
  - Infrastructure
    - Minimum 12 beds for upto 3000 deliveries per year
    - And 4 beds per 1000 additional deliveries
    - PLUS 4 adult beds for step down and/or rooming –in

PM Matru Vandana Yojana (under Ministry of women and child development)

Cash Incentives in **TWO installments** (previously 3 installments) – for the **First-Born child**

1. **First installment – INR 3000/-**
   1. Registration of pregnancy AND
   2. Atleast 1 ANC done within 6 months of LMP

2. **Second installment – INR 2000/-**
    1. Childbirth is registered AND
    2. Child received first cycle of BCG, OPV, DPT and Hep B

If the **second child in the family is a girl**, a Benefit of 6000/- is recently introduced. It is given in single installment

- In case of miscarriage/ still birth, the beneficiary is considered as fresh beneficiary in future pregnancy
- An eligible beneficiary can apply within 730 days of pregnancy
- **The female is also eligible for the JSY scheme, it is over and above the PM-MVY**

Anaemia mukt Bharat

- 6 x 6 x 6 Program
- 6 interventions
- 6 beneficiaries
- 6 Institutes

Age group	Iron dose	FA dose	Timing	Color	Remarks
Children 6-59 months of age	20 mg Iron	100 mcg	Bi weekly	-	Liquid bottle with auto dispenser
Children 5-9 years of age	45 mg	400 mcg	Weekly	Pink color	Sugar coated
School-going Adolescent Girls and Boys, 10-19 years of age Out-of-school Adolescent Girls, 10-19 years of age	60 mg	500 mcg	Weekly	Blue color	Sugar coated
Women of Reproductive Age (non-pregnant, non-lactating) 20-49 years (Under Mission Parivar Vikas)	60 mg	500 mcg	Weekly	Red color	Sugar coated
Pregnant Women and Lactating Mothers (of 0-6 months child)	60 mg	500 mcg	Daily	Red color	Sugar coated. FROM 4th month in pregnancy continue till 6 months in lactation

Management of Anaemia in Pregnancy

Hb Level > 7gm/dL	Gest Age < 34 weeks	More than 34 weeks
Tolerant to IFA	2 tablets IFA	IV Iron sucrose or IV ferric carboxy maltose
Not tolerant to IFA	IV Iron sucrose or IV ferric carboxy maltose	
	Hb 5 – 6.9 gm/dL	**Hb < 5 gm/dL**
1st or 2nd Trimester	IV Iron sucrose or IV ferric carboxy maltose	Hospitalization + iv infusion and/or blood transfusion
3rd trimester	Hospitalization + iv infusion and/or blood transfusion	

Note:

- Inj. Ferric carboxy maltose is not given as IM
- In case of thalassemia and sickle cell disease: IFA tablets and iron is not indicated
- Treatment of anemia through folic acid is recommended in thalassemia major cases.
- **Prophylaxis of anaemia** – is one tablet IFA to all pregnant females starting 4th month onwards – Under Anaemia mukt bharat

PMSMA - Pradhan Mantri Surakshit Matritva Abhiyan and HRP - high-risk pregnancy

- PMSMA session on 9th of every month for ANC screening and early detection of health conditions
- Line listing of all HRP maintained by ASHA and ANM
- ASHA to accompany the HRP female, Free transport ensured by ASHA under JSSK
- Ensure **3 additional ANC visits** for a "**High Risk Pregnancy"** (HRP) with a doctor/Obstetrician
- BEmONC (Basic Emergency obstetric and neonatal care) Training to Medical Officers
- Cash Incentive:
    - Rs.100 - to ASHA for additional 3 ANC for HRP
    - Rs 500 - for healthy outcome of baby, on 45th day

Medical Termination of Pregnancy

1. The Bill permits abortion to be **allowed up to 20 weeks** on the **opinion of just one medical practitioner**

2. To terminate pregnancies **between 20 and 24 weeks, the opinion of two doctors is required.** This extension of the gestation period up to 24 weeks is given for special categories of women such as rape/incest victims, differently-abled women, and minors

3. For abortions b**eyond 24 weeks, a state-level Medical Board will decide** if it can be permitted, in case of substantial foetal abnormalities

4. Only medical doctors with **specialization in OBG can perform abortions**

5. According to the Bill, the "name and other particulars of a woman whose pregnancy has been terminated **shall not be revealed**", except to a person authorized by law

6. In cases where abortions are desired to terminate pregnancies arising out of rape, where **the gestation period exceeds 24 weeks, the only manner would be through a writ petition.**

Family planning and Contraception

- **Target couple** – couple who has completed family and has atleast one live child
- **Eligible couple** – couple in which the female is in reproductive years (15 – 49 years)
- **Pearl's Index** – used to calculate the failure rate of contraceptives.

  Pearl's index = $\frac{number\ of\ accidental\ pregnancies}{women\ using\ same\ contraceptive\ x\ number\ of months\ of\ use} \ x\ 1200$
- **Lowest failure rate** is with Implants and OCPs
- **LARC (long acting reversible contraceptives) methods** – include implants and CuT
- IUD which is available under mission Parivar Vikas is CuT-380A (valid for 10 years) and short-term IUD Cu375 multiload device (valid for 5 years)

Missed OCPs

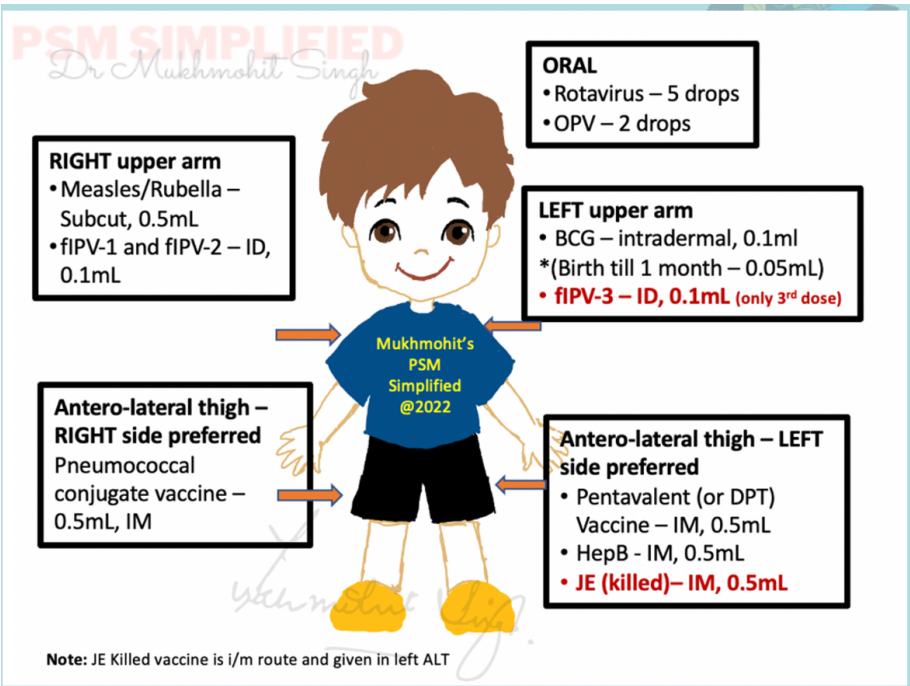
Missed Pills	Advice
Missed 1 or 2 pills/ started new pack 1 or 2 days late?	• Take one hormonal pill as soon as possible or two pills at scheduled time. • There is little or no risk of pregnancy
Missed 3 or more pills in the first or second week/started new pack 3 or more days late?	• Take one hormonal pill as soon as possible and continue the scheduled pill. • Use a backup method for the next 7 days. • Also can consider taking ECPs, if she had sex in the past 72 hours.
Missed 3 or more pills in the third week?	• Take one hormonal pill as soon as possible and finish all hormonal pills in the pack as scheduled. Throw away the 7 non-hormonal pills in a 28-pill pack. • Start a new pack the next day. • Use a backup method for the next 7 days. • Also can consider taking ECPs, if she had sex in the past 72 hours.

Contraception after delivery

- Breast feeding female:
  - POP / Chhaya – anytime after delivery
  - Antra injection - ONLY AFTER 6 weeks of delivery
  - OCP – ONLY after 6 months of delivery
- Non-Lactating female:
  - POP / Antra / Chhaya - anytime after delivery
  - OCP – ONLY after 3 WEEKS of delivery
- All females (irrespective of breastfeeding or not)
  - IUCD – either WITHIN 48 hrs or AFTER 6 weeks
  - Female sterilization – either WITHIN 1 week or AFTER 6 weeks
  - Emergency contraceptive pills – ONLY after 4 weeks of delivery

- POP = Progesterone only Pill (oral)
- Chhaya is Centchroman (30mg tablet – started as biweekly for 3 months and then weekly oral pills)
- Antra is Depot Medroxy progesterone acetate (150mg, IM injectable, every 90 days)

Immunization



Max age for vaccines:

- BCG – 1 year
- OPV 0 Dose – 15 days
- Hep B Birth Dose – 24 hrs
- Pentavalent, Rotavirus, PCV vaccine – 1 year
- OPV – 5 years
- Measles, MR vaccine – 5 years
- DPT – 7 years

UIP schedule after introduction of Td vaccine

Age	Vaccination schedule after Td introduction
At birth	BCG, OPV-zero dose, Hep B-birth dose
6 weeks	OPV-1, Pentavalent-1, Rota-1*, fIPV-1, PCV-1*
10 weeks	OPV-2, Pentavalent-2, Rota-2*
14 weeks	OPV-3, Pentavalent-3, Rota-3*, fIPV-2, PCV-2*
9 months	Measles-1/MR-1, Vit A, JE-1*, PCV-B*, fIPV-3
16-24 months	DPT first booster dose, OPV-booster dose, Measles-2/ MR-2, JE-2*
5-6 years	DPT second booster dose
10 & 16 years	Td
For pregnant woman	Td-1 : early in pregnancy Td-2 : 4 weeks after Td-1 Td-B: if pregnancy occur within 3 years of last pregnancy and 2 Td doses were received

Types of subunit Vaccine

- **Toxoids (Detoxicated Toxins):** E.g. Diphtheria, Tetanus, Anthrax
- **Protein Vaccine:** Influenza vaccine (Hemagglutinin and Neuraminidase) and acellular pertussis vaccines
- **Recombinant protein vaccine:** Antigens are expressed on *E. coli*, yeast, mammalian cells, etc.

Advantage and disadvantage

- **Advantage:** Safe
- **Disadvantage:** Less immunogenic and need an adjuvant to enhance efficacy. For example, hepatitis B, HPV vaccine.

Vaccine	Viral	Bacterial	Rickettsial
Live attenuated	Polio (OPV/Sabin), Yellow fever Measles, Mumps, Rubella, Influenza, JE (SA 14-14-2) Varicella, Rotavirus	BCG, Typhoid (oral) Plague	Epidemic typhus
Killed	Polio (Salk/IPV), KFD, Influenza, Hepatitis B and A, Japanese encephalitis, Rabies	Typhoid (IM), Plague, Cholera, Pertussis, Cerebrospinal Meningitis	Typhus
Toxoid		Diphtheria, Tetanus, Anthrax	
Protein		Acellular Pertussis, Influenza (HA and NA)	
Polysaccharides		Pneumococcal vaccine, Meningococcal vaccine, Typhoid (Vi), Hib	
Recombinant	Hepatitis B, HPV	Cholera Toxin B, Lyme disease	

Cold Chain:

- Most heat sensitive vaccine – OPV > measles > BCG
- Most freeze sensitive vaccine – HepB > pentavalent, PCV > DPT > Td vaccines
- OPV is placed in bottom shelf in ILD and Diluents are placed in top layer in the ILR

Cause-specific AEFI	Definition
Vaccine product-related reaction	An event that is caused or precipitated by a vaccine due to one or more of the inherent properties of the vaccine product.
Vaccine quality defect-related reaction	An event that is caused or precipitated by a vaccine that is due to one or more quality defects of the vaccine product, including its administration device as provided by the manufacturer.
Immunization error-related reaction (formerly "programme error")	An event that is caused by inappropriate vaccine handling, prescribing or administration and thus by its nature is preventable.
Immunization triggered stress response (earlier Immunization anxiety-related reaction)	An event arising from anxiety about the immunization.
Coincidental event	An event that is caused by something other than the vaccine product, immunization error or immunization anxiety.

AEFI – Adverse Events Following Immunization

BCG - Lymphadenitis, Ulceration and Scar (normal reaction)

TT vaccine – brachial neuritis

Rotavirus vaccine– Intussusception

Pertussis Vaccine – Unconsolable (persistent for > 3 hrs) cry, neurological deficits

OPV – Vaccine associated paralytic polio

National Leprosy Eradication Program

Targets – Vision: "Leprosy Mukt Bharat 2027"

- To reduce Prevalence rate less than 1/10,000 population at sub national and district level. (achieved in dec 2005)
- To reduce Grade II disability % < 1 among new cases at National level
- To reduce Grade II disability cases < 1 case per million population at National level
- Zero disabilities among new Child cases
- Zero stigma and discrimination against persons affected by leprosy

Newer strategies:

- One nerve involvement is now taken as multibacillary leprosy *(see table below)*
- All 3 drugs (Dapsone, rifampicin and clofazimine) are given for both paucibacillary and multibacillary leprosy case *(see table below)*
- Paucibacillary has to complete 6 months regime in 9 months and multibacillary has to complete the 9 months regime in 12 months *(see table below)*
- Single dose rifampicin for all contacts (social and household) of leprosy case
- Welfare allowance of Rs. 8000 - 12,000 for reconstructive surgeries
- ASHA-based Surveillance for Leprosy Suspects (ABSULS)
- Nikusth 2.0 Launched – integrated portal for reporting and case management of leprosy

NLEP 2025 UPDATE

Diagnostic Criteria

Implemented by NLEP, GoI w.e.f. 01.04.2025

Type	Skin lesions	nerve involvement	Bacilli in Lab-test (skin slit smear)
Paucibacillary	1 – 5	No nerve	ABSENT (Negative)
Multibacillary	More than 5	One or more nerve involved	Present (Positive)

SAPNA

Treatment REGIME

Type	Age group	Time	Dapsone	Clofazimine	Rifampicin
Paucibacillary	Adult	6 months	100 mg Daily	300 mg Monthly 50 mg Daily	600 mg monthly
	Child (9-14 yrs)	6 months	50 mg Daily	150 mg Monthly 50 mg ALTERNATE day	450 mg monthly
Multibacillary	Adult	12 months	100 mg Daily	300 mg Monthly 50 mg Daily	600 mg monthly
	Child (9-14 yrs)	12 months	50 mg Daily	150 mg Monthly 50 mg ALTERNATE day	450 mg monthly

National Polio Surveillance Program

- **Last case**
  - wPV2 – 24 oct 1999, Aligarh, Uttar Pradesh
  - wPV3 – 22 October 2010, Pakur, Jharkhand
  - wPV1 – 13 January 2011, Howrah, west Bengal
- **Most epidemics** – wPV1
- **Vaccine derived polio virus (VDPV)**
  - Mostly because of mutations, may communicate within the population
  - Associated with live vaccine P2 strain
- **Vaccine Associated Paralytic Polio (VAPP)**
  - Mostly because of minor mutations, random immune response by host
  - Associated with live vaccine P3 strain, taken as Side effect of OPVs
- **Bivalent OPV (bOPV)** contains P1 and P3
- **Fractional IPV** – has P1, P2 and P3 strain. – Update in Schedule:
  - fIPV 1 and 2 at - 6 weeks and 14 weeks – 0.1mL, Intradermal in right upper arm
  - fIPV 3rd dose is given at 9 months of age – 0.1mL, Intradermal in Left upper arm
- National Switch day – 25th April 2016

Indicators:

- **Impact Indicator**: AFP reporting rate – should be more than 1 AFP reported per lac population per year

Operational Indicator –

- **Stool adequacy rate** – should be more than 80%
- **Residual paralysis check rate** should be more than 80%

National TB elimination Program

- **Targets**: more than 80% decrease in TB Incidence and > 90% decrease in Deaths due to TB compared to 2010 levels
- **Diagnosis** – Sputum smear is sensitive test and fastest method. CBNAAT is diagnostic
- **Treatment** – (2) HRZE + (4) HRE for Drug sensitive TB
- **Prophylaxis** – (6) H or (3) HP (isoniazid and Rifapentine) for close contacts
- Always give **Vit B6** (pyridoxine) along with Isoniazid to prevent peripheral neuropathy
- **Nikshay** – software for TB notification
- **Nikshay POSHAN Yojana** – 1000 INR is given for nutritional support to TB cases

TB management in Pregnancy

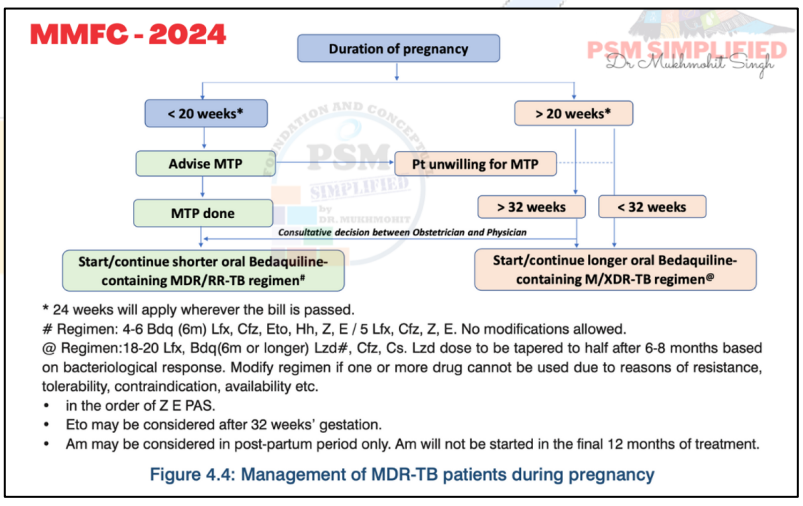


Figure 4.4: Management of MDR-TB patients during pregnancy

National Action Plan for Snake Bite Envenoming (NAPSE)

- **Target – to Halve the snakebite related deaths by 2030**

1. Snake bite is now included in the notifiable disease list
2. Big FOUR – common krait, Indian cobra, Russel's viper, saw scaled viper – responsible for 90% of snakebite incidents
3. Polyvalent anti-snake venom (ASV) of these "big four" is effective in 80% of the snakebite cases.
4. While non-venomous snakebites leave a number of small impressions in a row, venomous snakebites are characterized by two faint impressions left by fang teeth

Snake Bite - Venomous snake bite maybe of two types –

Viperids	Elapids
• Pain and tender swelling, esp. within 2 hours of snake bite • Inflammation of lymphatic vessels • Syncope, collapse, transient loss of vision &/or consciousness • Hemorrhage, hypotension, shock	• Flaccid paralysis • Less local signs and symptoms

Snake bite – Clinical Syndrome Spectrum:

- **Krait** – neuroparalytic symptoms, abdominal pain, no local signs
- **Viper –** local necrosis, pain, swelling, compartment syndrome
- **Cobra krait –** ptosis, diplopia, dysphagia, dysphonia, paralysis
- **Viper (Russel's, saw-scale)** – bleeding, Acute kidney injury, shock
- **Flat tail sea snake** – muscle aches, involuntary contractions, compartment syndrome

Rheumatic fever Prophylaxis

1. Primary prevention of Rheumatic fever (treatment for GAS Pharyngitis) – either of following:
   a. Benzathine penicillin G – Single dose
      i. 6 lac units for weight < 27 kgs and 12 lac units for weight > 27 kgs
   b. Phenoxymethyl penicillin (penicillin V) – 2 – 3 times daily for 10 days
      i. 250 mg child dose, weight < 27 kgs and 500 mg adult dose, weight > 27 kgs

2. **Secondary prevention** of Rheumatic fever – Either of the following:
   a. Benzathine penicillin G – every 21 days (every 3 weeks)
      i. 6 lac units for weight < 27 kgs and 12 lac units for weight > 27 kgs
   b. Phenoxymethyl penicillin (penicillin V) – 250 mg twice daily, orally
   c. Erythromycin (in case of Penicillin allergy) – 250 mg, twice daily, orally

Duration of secondary Prophylaxis

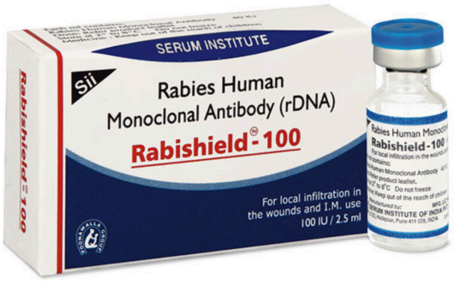
For patients WITHOUT carditis	5 years after last ARF episode or until 21 years of age
Patients WITH mild carditis but no RHD	Minimum for 10 years of last ARF episode or until 25 years of age – whichever is longer
Patients with moderate to severe RHD who have undergone valve surgery (either repair or replacement)	For 40 years of age (preferably lifelong)

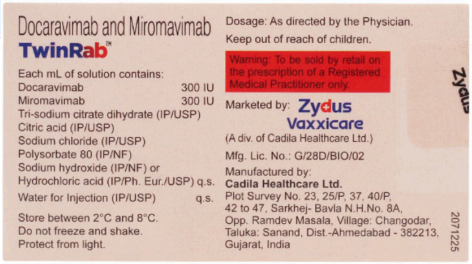
RABIES Prophylaxis

Anti Rabies Prophylaxis:

1. Pre-Exposure Prophylaxis — **Day 0 → Day 7 → Day 21 or 28**
2. Post-Exposure Prophylaxis
   a. Essen regime — **Day 0 → Day 3 → Day 7 → Day 14 → Day 28**
      i. One dose each visit, Intramuscular, complete Vial
   b. Thai red cross — **Day 0 → Day 3 → Day 7 → xxxxx → Day 28**
      i. Two doses each visit, Intradermal, 0.1 mL
3. Re-Exposure Prophylaxis — **Day 0 → Day 3**
   a. One dose each visit, Intramuscular or intradermal
   b. All previously immunized more than 3 months ago
   c. No Rabies immunoglobulin is recommended

- **Wound management** – 15 – 20 mins wash with running water and soap
- **In case of Immunocompromised individuals**
  - better is intramuscular regimes and Give RIG in class II and Class III bites
- **Monoclonal antibodies: (given as substitute of Rabies IG)**
  - SII Rmab (Rabishield) - recombinant anti-rabies mAb
  - TwinRab – Docaravimab, Miromavimab





Epidemiology, Medical Research

	Cross- sectional	Ecological	Case control	Cohort
Also known as	Snapshot of population	Correlational study	Retrospective study	Prospective study
Unit	Individual	Population	Individual	Individual
Start with	Total population	Data sources for population	Disease and non-disease	Risk factor exposed and non-exposed
Use	Prevalence	Correlation of variables	Odds ratio	Risk ratio, attributable risk
Bias	Selection bias	Ecological fallacy	Recall bias	Hawthorne effect, Attrition bias
			Multiple risk factors can be assessed	Multiple outcomes can be assessed
			Rare disease	Rare risk factors
			Effect to cause	Cause to effect
			Less expensive, less time	More expensive, more time

Bias are random errors and treated by Blinding (double blind is most common form)

Berksonian bias – Differential hospital admission rates, hospital based case control studies

Hawthorne bias – Change in behavior while under observation, cohort studies

Neyman bias – Incidence prevalence bias, different mortality rates

Attrition Bias – Loss to follow up bias, cohort studies or interventional studies

Recall Bias – Differential ability to recall between cases and controls, case control study

Interpretation:

Relative Risk (or risk ratio) and / or Odds ratio:
<1 : negative association, Protective factor
> 1 : positive association, risk factor
= 1 : No association

Treatment for Bias – Blinding
Treatment for known confounder – matching
Treatment for unknown confounder – Randomisation, Regression, stratification

QUIZ time

FILL Blanks and send screenshot of your answers to my Telegram / Instagram handle.
Your answers will be shared on the Insta story

Best Study for:

1. Rare disease
2. Rare Risk factor
3. Rare Investigations
4. Natural course of disease
5. Incidence of disease
6. Prevalence (or burden) of disease
7. To study multiple outcomes
8. To study correlation of variables
9. To study multiple risk factors
10. To find the effect of vaccines
11. To find the effect of drugs or interventions
12. To find causal association or final effect of the intervention

SMART PSM

Important Formula to remember

1. RR / OR

Relative risk = incidence exposed / incidence non exposed
Odds ratio = cross product ratio

2. AR / PAR

Attributable risk = (Incidence exposed – Incidence non exposed) / incidence exposed
Population attributable risk = (total incidence – Incidence exposed) / total incidence

3. ARR / NNT

Absolute risk reduction (ARR) = control event rate – Experimental event rate
Number needed to treat = 1 / ARR

4. Sensitivity / Specificity / PPV/NPV

Sensitivity = True positive / total diseased
Specificity = True negative / total healthy
PPV = True positive / total tested positive
NPV = true negative / total tested negative

5. CV, V, SD, SEP, SEM, CD, Regression

Coefficient of variation = SD / mean
Variance = SD x SD
Standard deviation = root of mean of squared deviations
Standard error of mean = SD / sq root of 'n'
Standard error of proportions = Sq root of (prevalence x 100-prevalence / n)
Coefficient of determination = square of correlation coefficient
Regression = y = a + bx

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SMART PSM: Important Formula to remember (Continued)

6. GFR/ TFR / GRR / NRR

General fertility rate – total children a female will bear during her reproductive years
Total fertility rate – total children a female will bear during her reproductive years assuming the age specific fertility pattern
Gross reproduction rate – Total daughters a female will have during her reproductive years assuming the age specific fertility pattern
Net reproduction rate – Total daughters a female will have during her entire life assuming the age specific fertility and mortality rates

7. Pearl's Index

Number of accidental pregnancies / total women years of exposure * 100

8. **Dependency ratio** = number of dependent (age 0-14 years and more than 65 years) / number of independent (age 15-64 years). It is 48.7 for India (Source: CIA 2020)

9. **Net protein utilization** –

It is product of biological value and digestibility coefficient of protein.
= amount of nitrogen generated for body mass / total protein ingested * 100

10. **Corrected effective temperature** – takes into account air temperature, humidity, movement, cooling power and radiant heat

Nutrition – Recommended Dietary allowance

TOTAL ENERGY REQUIREMENT (TEE) IS GIVEN BY:
= BMR (BASAL METABOLIC RATE) X PAL (PHYSICAL ACTIVITY LEVEL)

- RDA (recommended dietary allowance) corresponds to +2SD
- EAR (Estimated average Requirement) corresponds to median

Recommended calorie requirement: (sedentary / moderate/ heavy worker)

- Male – 2110 (+600/700)
- Female – 1660 (+500/600)
- Pregnancy - +350 kcal
- Lactation –
- 0 – 6 months + 600 kcal
- 6 – 12 months +520 kcal
- Male, Age > 60 years 1700 kcal
- Female, Age > 60 yrs 1500 kcal

Protein (0.83 g/kg / d)

- Male 54 gms / d
- Female 45 g/d
- Pregnant (2nd TM) +9.5 g/d
- Pregnant (3rd TM) +22 g/d
- Lactation (0-6 mo) +17 g/d
- Lactation (6-12 mo) +13 g/d

Iron

- Male 19 mg/d
- Female 29 mg/d
- Pregnant 27mg/d
- Lactation 23 mg/d

Iodine requirement:

- Adults: 140 mcg / day
- Pregnant: 220 mcg / d
- Lactating: 280 mcg/day

Fibre (15 gms / 1000 kcal)

- Male- 30 – 50 gm/d
- Female /preg / lact -25 – 40 gm/d
- (Pregnancy and lactation – not extra)

Vitamin A:

- Male 1000 mcg/d
- Female 840 mcg/d
- Pregnant 900 mcg/d
- Lactation 950 mcg/d

Folate:

- Male: 300 mcg/d
- Female: 220 mcg/d
- Pregnant: 570 mcg/d
- Lactation: 330 mcg/d

Vitamin C:

- Male: 80 mg/d
- Female: 65 mg/d
- Pregnant: 80 mg/d
- Lactation: 115 mg/d

Miscellaneous topics

Important Instruments in Public Health

Parameter	Testing method/ device/. mode
Temperature	Thermometer
Humidity	Psychrometer, hygrometer
Cooling power and low air velocity	Kata thermometer
Air pressure	Barometer
Radiant heat	Globe thermometer
Wind direction	Windsock
Air movement	Anemometer, venturi meter
Solid suspended particles in water	Hydrometer
Milk density	Lactometer
Mild density due to other than fat	Solid non-fat testing
Milk pasteurization	Phosphatase test, standard plate count, colony count
Water faecal contamination	Coliform count, most probable number method test, mc cartney chart method
Gross bacterial contamination of milk	Methylene blue reductase test
Argemone adulteration in mustard oil	Nitric acid paper chromatography test
Protein quality	DIAAS, PDCAAS, NPU
Water quality	Chlorine estimation, orthotoulidine test, orthotoulidine arsenate test
Light reaching surface	Illumination (luminescence), Lux

Chlorine does not affect:
Sporing organisms • Protozoal cysts • Helminthes • Ova • Molluscs
Cyclops • Cercariae • Hepatitis A • Poliovirus

Cyclops maybe killed at very high chlorine levels (more than 20 ppm)
But at these levels, the chlorine will give bad odor and taste.

Cyclops can be killed by temephos, filtration, storage and sedimentation.

Storage and sedimentation will eliminate: suspended matter, organisms, cysts, ova, mollusks and Cyclops.

IT Innovations in Public Health

- Swasth bharat mobile app – public health alerts, lifestyle diseases
- ANM Online application (ANMOL) – tablet based application for recording data, and notification
- E-raktkosh Inititative – blood bank management information system
- India fights dengue mobile app
- Kilkari app – time based notifications, reminders for child development and monitoring
- M-cessation – support for quitting tobacco
- National health portal – consolidated health information, guidelines
- National e-Health authority (NeHA) – electronic health records
- HMIS – Health management and information systems – digitalization of health care
- M-Diabetes – online module for health awareness and control of diabetes
- Nikshay – online, TB reporting and management software
- Nikusht – online leprosy case management and reporting software
- 99DOTS – TB treatment compliance using mobile phone missed calls
- eVIN – vaccine logistic and stock management system

Management designs

Qualitative designs	Quantitative Designs
• **Organisational design** - good design of the organisation hierarchy • **Personnel management** – Selection, Motivation, Training, incentives for better work • **Communication** – channel of communication • **Information systems** – for all formal / non formal information to take better actions • **Management by objectives** – short term plans and objectives for units and subunits	**Cost benefit analysis** – based on monetary gains **Cost effective analysis** – based on number of lives affected **Cost accounting** – cost control, planning and allocation of resources, cost re-imbursement **Input out analysis** – calculate the efficiency and effectivity of the process **Model** – to create model of how things will work in organisation **System analysis** – to analyse the most cost-effective alternate systems **Network analysis** PERT – program evaluation and review technique – tells the sequence for completing the events CPM – critical path method – tells the minimum time to complete event (longest path is critical path) **Planning programming** – budgeting systems – planning and set the budget, accordingly, not based on previous budgets **Work sampling** – type of activities performed, time needed to do the tasks, to standardize jobs and determine the manpower required **Decision making** – the power to make decisions, procurements, planning matching to the authority level

Health care delivery approaches:

- **Service Approach** - Health services needed by people are provided at their doorsteps assuming they would use them. (E.g. Basic Health Services, 1960's).
- **Health Education Approach** - People are informed, educated, encouraged to make their own choice for a healthy life (Slow, but enduring)
- **Primary Health Care Approach** - Emphasizes on community participation and involvement in planning and delivery of health services.
- **Regulatory** - where the health care providers are regulated by organisations and includes insured health care services

Learning types:

• **Cognitive domain:** It focuses on intellectual skills. (Learning, rattafications, memorizing of facts)

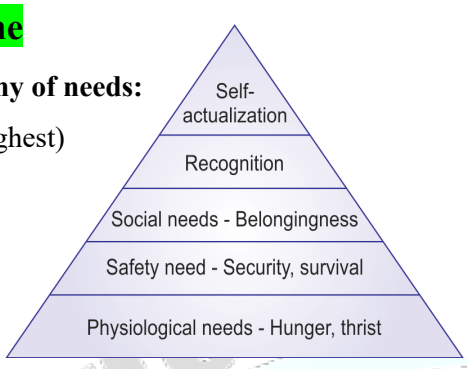
• **Psychomotor domain:** It focuses on performing sequences of motor activities to a specified level of accuracy, smoothness, rapidity, or force. (doing some specific techniques during surgery – as tying knots, or using laproscope or removing fascia using cautery, hand washing skills, etc..)

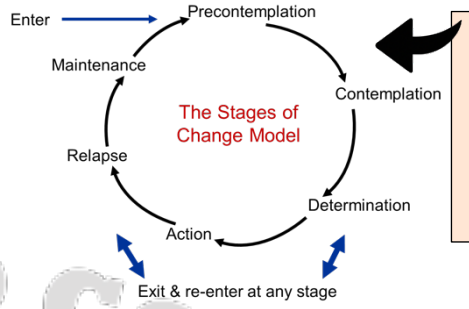
• **Affective domain:** It causes on attitude, motivation, willingness to participate, valuing what is being learned and ultimately incorporating the discipline values into real life. (attitude towards blood donation, teaching while on rounds)

Social medicine

Maslow's hierarchy of needs:

(From lowest to highest)





Transtheoretical Model of change and adaptation – Role of motivation in behaviour change

Barriers in communication

1. Physiological - difficulties in hearing, expression.

2. Psychological - emotional disturbances, neurosis, levels of intelligence, language or comprehension difficulties.

3. Environmental - noise, invisibility, congestion.

4. Cultural- illiteracy, levels of knowledge and understanding, customs, beliefs, religion, attitudes, economic and social class differences, language variations, cultural difficulties between foreigners and nationals, between urban education and the rural population.

Employee State Insurance Scheme – under ministry of labour

- **ESI DAY - Feb 24**
- Premium Contribution - 3.25% by employer and 0.75% by employee
- For all organisations except - Railway, defence, mines and centre govt
- Applicable for persons with wage < 21000 per month
- Benefits:
  - Direct benefits - via the ESI hospitals, dispensaries and polyclinics
  - Indirect benefits via the empaneled hospitals / Clinics

List of benefits:

1.Sickness benefit - upto 91 days, upto 70% of wage
2.Extended sickness, upto 2 years, upto 80% of the wage
3.Disablement benefit
4.Dependent benefit
5.Maternity benefit
   a. 4 weeks for any medical condition affecting pregnancy
   b. 6 weeks - abortions, miscarriage
   c. 26 weeks - delivery services
6.Funeral expense - direct cash, INR 15000 to grieved family

Factories Act:

Atleast 500 cu ft space per worker

•Max hours of work - 48 hours / week of work + 2 hours overtime, **not to exceed 60 hrs per week** (including overtimes)

•No employment for **age < 14 years**

•For children of **tender age and Pregnant / lactating females**

- Give appropriate work, No Night duties
- Right to education, atleast 1 casual leave for every 15 days

•For > 50 employees - creche facility

•For > 250 employees - Canteen

•For > 500 employees - Welfare officer

•For > 1000 employees - Safety Officer

PSM Simplified

by Dr Mukhmohit Singh

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YouTube: For Free videos and Previous Year MCQ discussions:

https://www.youtube.com/c/DrMukhmohitsinghsCommunityMedicineSimplified/playlists

Facebook Group:

Marrowlings Fb group or

Mukhmohit's Community & Medicine Discussions

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