Toppersnotes
Unleash the topper in you

A to Z

NURSING OFFICER EXAM

For All State NHM, CHO & Nursing Officer Exams

Volume - 4

SIERRA INNOVATIONS

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1 CHAPTER Community Health Nursing

Infectious Disease Epidemiology – I

- **Infection**
  - ✓ Process of entry and development of multiplication of an infectious agent in the body.
- **Contamination**
  - ✓ Presence of infective agent on body surface/article/matter/substance.
- **Infestation**
  - ✓ Lodgement and development/multiplication of an arthropod on body or clothes.

Definition of Epidemiology:

A study of distribution [Time, Person] and determinants
[Risk factors] of disease or health related states or events and
Measures to control or prevent the disease] ← NHP
→ John M Last (1988).

Types of infection:

- **Nosocomial**
  - ✓ Hospital acquired
  - ✓ Within > 48 hours of admission or within 48 hours of discharge.
  - ✓ Eg:
    - Penumonias (staph)
    - Urinary tract infection
    - HBV infections
  - ✓ Surgical wound infections
- **Iatrogenic**
  - ✓ Following a preventive/diagnostic/therapeutic intervention
- **Exotic**
  - ✓ Not present in an area/country
  - ✓ Eg:
    - Rabies (UK)
    - Yellow fever (India)
- **Opportunistic**
  - ✓ Defective host immune defense system
  - ✓ Eg:-
    - TB in HIV
    - Pneumocystis carinii pneumonia in HIV
    - Salmonella infection in splenectomy
- **Dead – End**
  - ✓ No portal of exit
  - ✓ Eg: Rabies in human
    - Plague
    - Tetanus
    - Scrub typhus
    - Murine typhus, Hydatid, Indian Tick typhus

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Agent determinants Infectivity

- Ability of an agent to invade and multiply
- Measured in terms of attack rate/secondary Attack rate Antigenicity
- Ability of an agent to induce or produce a local immune response in the host.

Virulence

- Killing power of disease
- The ability to cause a severe disease or complications in disease
- Assessed as case fatality rates

Pathogenicity

- Ability of an organism to induce or produce local inflammatory response or pathological changes (clinical features)
- Helps to assess symptomatology of disease

Host determinants:

Obligate host

- The only host
- Eg: man in
  - ✓ Measles
  - ✓ Typhoid fever

Primary host

- AKA definitive host
- In which the microorganisms
  - ✓ Achieve sexual stage
  - ✓ Attains maturity
  - ✓ Secondary host
- AKA intermediate host
- In which the parasite or microorganism lives in Asexual or larval stage

Disease	Primary host	Secondary host
Filaria	Man	Mosquito (culex)
Malaria	Mosquito (Anopheles)	Man
Tapeworm	Man	Pig (T. solium), Cattle (T. saginata)
Guinea worm	Man	Cyclops
Hydatid disease	Dog	Sheep, cattle man
Sleeping sickness	Man	Tsetse fly

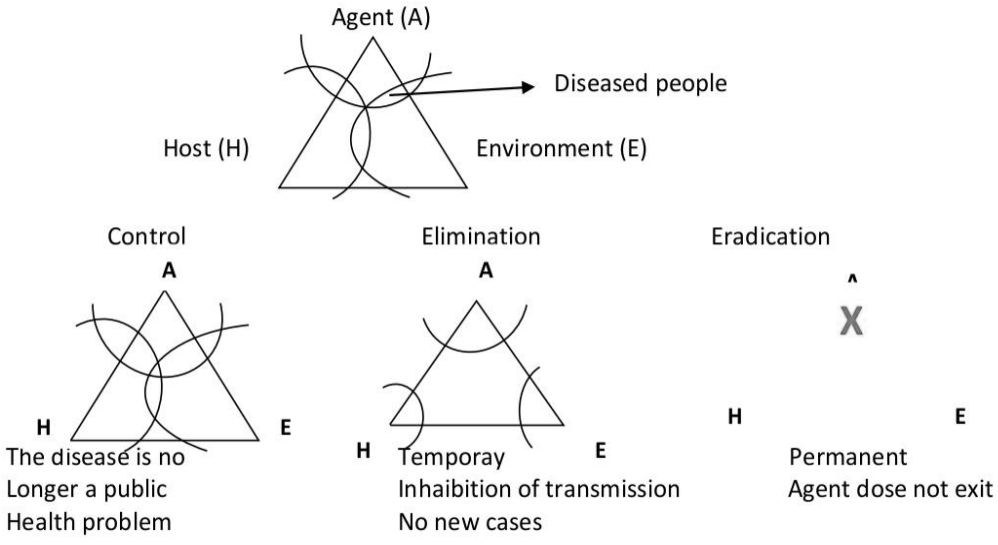
Disease determinants:

- **Infectious disease**
  - ✓ Due to an infectious agent
- **Contagious disease**
  - ✓ Person to person spread
  - ✓ Direct contact (skin)
- **Communicable disease**
  - ✓ From person to person or area to area.
- **Sporadic Disease**
  - ✓ Scattered disease (not epidemiologically linked)
  - ✓ Eg: Tetanus, Anthrax, Rabies
- **Endemic disease**
  - ✓ Persistent presence of a disease in an area.
  - ✓ Eg: India is endemic to:- cholera, Typhoid, Hepatitis

- **Epidemic**
  - ✓ Sudden risk in number of cases which is clearly in excess and which is:
    - 80% expected frequency
    - >2 SD of normal frequency
- **Pandemic**
  - ✓ Disease crosses 2 WHO regions or 2 different continents
  - ✓ Disease having pandemic threat:
    - Cholera
    - YF (Yellow fever)
    - Plague
    - Poliomyelitis
    - Influenza
- **Zoonoses**
  - ✓ Infection of animals
- **Zooanthroponoses**
  - ✓ Animals receive infection from human beings
  - ✓ Eg; Cattle TB
- **Anthropozoonoses**
  - ✓ Human beings receive infections from animals
  - ✓ Eg: Rabies, JE, Plague, Anthrax
- **Amphixenasis**
  - ✓ Infection from animal to human and vice versa
  - ✓ Eg; Trypanosomiasis
- **Ornithosis**
  - ✓ Infection among birds
- **Epornithic**
  - ✓ Epidemic in birds
- **Enzootic**
  - ✓ Endemic in animals
- **Epizootic**
  - ✓ Epidemic in animals

Prevention of infections:

- **Epidemiological Triad**



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Diseases eradicated in India:

- Small pox
- Guinea worm disease
- Wild Poliomyelitis

Potentially eradicable diseases:

- Measles
- Malaria
- Poliomyelitis
- Leprosy (long IP, no culture technique)
- Yaws

India declared free from:

- Yaws
- Childhood trachoma
- Neonatal tetanus

Chain of transmission:

Source:

- Any living or non-living substance in which infective agent lives, multiplies and can transmit to the host.

Reservoir:

- Harbour of infection
- May or may not transmit

Types:

- Homologous: Same species involved
  Eg: - Man (Cholera)
- Heterologous: Different species involved
  Eg: Salmonella
  - ✓ Humans
  - ✓ Birds

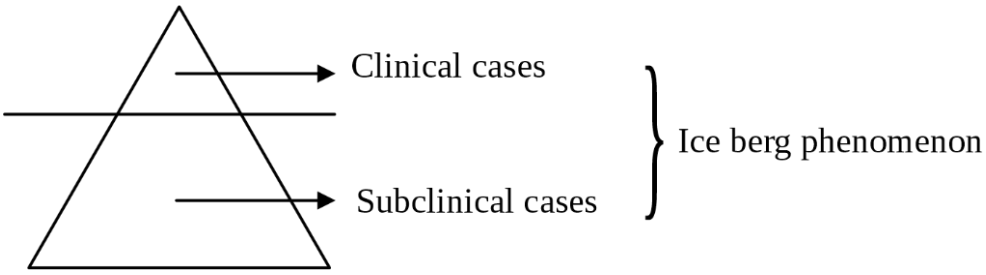
Infections	**Reservoir**	**Source**
Typhoid fever	Case or carrier (man)	Unsafe water and food
Pandemic influenza	Pigs and ducks	–
Chlamydia	Pigeons	–
Histoplasmosis ornithosis, arbovirus	Wild birds	–
Tuberculosis	Man	Sputum
HIV/AIDS	Man	Body fluids and secretions
Malaria	Man and mosquito	Infected blood
Rabies	Dog and other animals	Saliva
Measles	Man	Droplets
Japanse encephalitis	Pig and birds	Infected mosquito
Cholera	Man	Unsafe water and food
Plague	Rodents	Infected flies
KFD	Monkey	Hard tick

Case:

- Person who receives the infection and may show signs and symptoms.

Classification:

1. **Primary case:** - 1st case
2. **Secondary case:** - Subsequent cases from 1^0 case in 1 incubation period.
3. **Index case:**- 1st observed case
4. **Clinical case:**

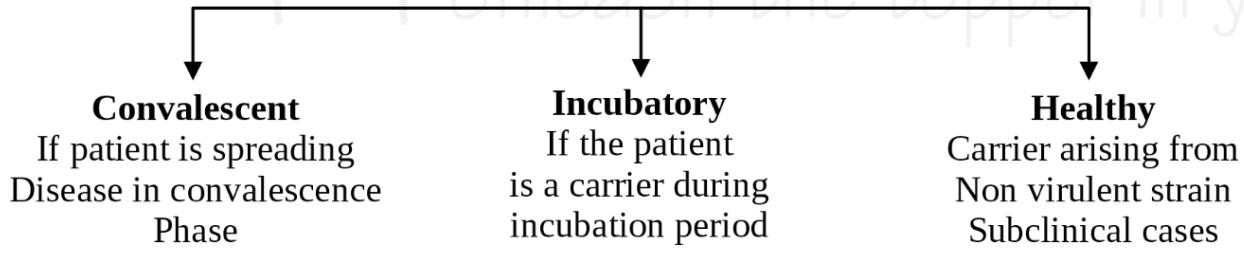


5. **Subclinical cases:-** Maintenance of infection in community
   Do not show signs and symptoms.
6. **Latent case:-**
   Agent is dormant
   No spread
   Examples for subclinical cases:
   - ✓ Rubella:- 50-60% subclinical cases
   - ✓ Polio:- 75 subclinical cases: 1 Polio case
   - ✓ Mumps:- 30-40% subclinical cases
   - ✓ Hepatitis:-A,B
   - ✓ JE
   - ✓ Influenza
   - ✓ Diphtheria

Carrier:

- ➢ Infected person, who harbours the infection and spreads the infection
- ➢ Do not develop signs and symptoms
- ➢ Absence of disease

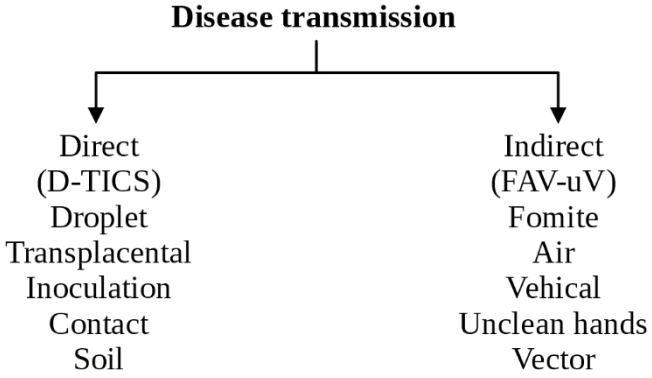
Temporary carrier:



Chronic carrier:

Chronic	Healthy	Convalescent	Incubatory
Malaria	Polio	Diphtheria	Diphtheria
Meninitis	Typhoid	Typhoid	Measles
Typhoid	Cholera	Cholera	Mumps
Dysentery	Diphtheria	Dysentery	Polio
HBV	Meningitis	Pertussis	Pertussis
Gonorrhea			HBV
			Influenza

Infectious Disease Epidemiology – II



Direct mode of transmission:

Contact:

- Mucosa → Mucosa transmission
- Mucosa → Skin
- Skin → skin

  Eg: STD, HIV, Leprosy, Dermatological infections, Eye infections, Leptospirosis Soil Mycosis, Hookworm infections, tetanus

Inoculation:

- Into the skin/mucosa
- Eg: Needle stick injuries
- Animal bite → Rabies

Droplet:

- Travel up to 30 to 60 cm
- Size < 10 mm: Enters the nose
- 5-10 mm → may reach the Alveoli

  Eg: Respiratory infection: Pertussis, TB, Pneumonia.

Transplacental:

- Transmission of disease from mother to fetus via Placenta.

  Eg:- Transmission of TORCH, HIV

Chemicals – Thaildomide, Stilbestrol, heavy chemicals

- 1st trimester: Rubella
- 2nd trimester: Parvovirus
- 3rd trimester: Syphilis, toxoplasmosis, CMV, Hepatitis B
- Delivery: Hepatitis C, Herpes, HIV

Indirect transmission:

Fomites (Non living)

- Do not include water, air, food, fluids
- Transmission of diarrhea, respiratory infections

Air borne:

- Droplet nuclei: (Dried residues of drop)
  - ✓ Travel longer distance
  - ✓ Size 1-10u
  - ✓ Transmission of Respiratory infections:- TB, Pertussis, Diphtheria
- Dust: mycosis, Bacterial disease

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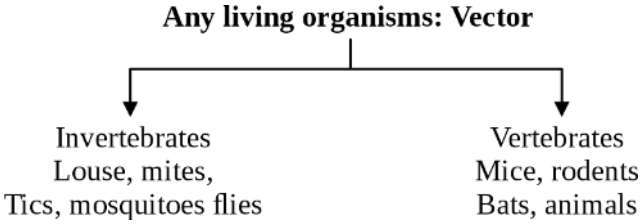
Vehicle borne:

- Include water, food, fluid (blood/plasma/serum)
  Eg: Faeco oral transmission: typhoid, cholera, acute gastroenteritis, Hepatitis- A, food poisoning blood born – Hepatitis- B, HIV.

Unclean hands:

- Major source of infection (especially nosocomial infection) Diarrheal disease

Vector borne:



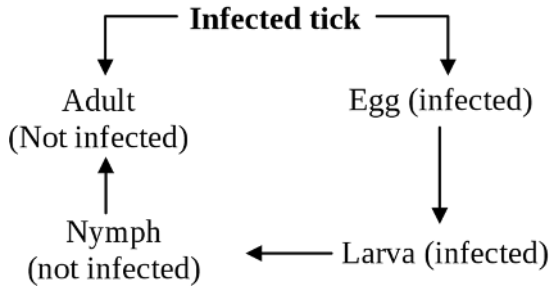
Transmission chain of vectors:

1. **Man & invertebrate host**
   - ✓ Malaria: man → Arthropod → man
   - ✓ Schistomomiasis: Man → Snail → Man
2. **Vertebrate host** → invertebrate host → man
   Eg: -
   Plague: Rat → Arthropod → Human
   Encephalitis: Birds → Arthropod → Human
3. **Human & 2 intermediate hosts**
   Fish tapeworm: Human → Cyclops → fish → human
   Clonorchis senses: Human → snail → fish → Human
   Pargonimus: Human → snail → crab → Human

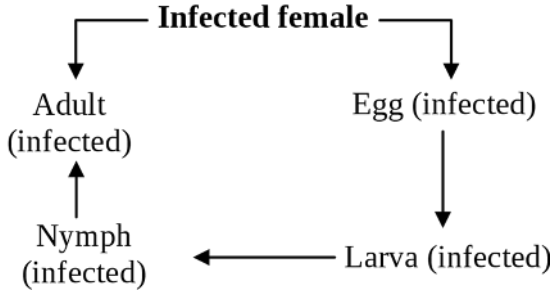
Biological transmission

Propagative	Cyclodevelopment	Cyclopropagative
Organism → Vector ↓ Multiplies ↓ Changes in number Eg: plague	Organism → Vector ↓ Change in shape / size / stage Eg: Microfilariais	Organism → Vector ↓ Change in number + Change in shape Eg: Malaria

4. Transovarian transmission



5. Transstadial transmission



Mode of transmission	Diseases
Direct contact	STD, Leprosy, Leptopirosis, derria infection
Droplet	TB, Pertusis
Soil	Tetanus, hookworm
Inoculation	Rabies, Hep. B
Vertical	HIV, TORCH, Syphils

Indirect	Five F's
Air borne	TB, Varicella, measles, influenza
Vector borne	Dengue, MFD, Tapeworm disease schistosomiasis
Vehicle borne	Acute GE, cholera, polio, food poisoning valaria, syphis, hep B
Fomite borne	GI infections Respiratory infections

Timeline is infectious disease

- **Incubation period:** Entry of organism to the 1st sign/symptoms of the disease determinespathogenicity of an agent
- **Generation time:** Entry of organism to the maximum communicability
- **Serial interval:** Time interval between primary & secondary case infectivity of an agent

Disease	**Incubation period (days)**
Chickenpox	10–21
Measles	8–12
Roseola	9–10
Rubella (German measles)	14–21
Influenza	1–3
Most URTI (cold, bronchiolitis etc)	2–5
Most diarrhoea (bacterial, viral)	1–5
Giardiasis	7–28
Hepatitis A	15–50
Fifth disease (Erythema infectiosus)	4–14
Hand, foot, and mouth disease	3–6
Impetigo (Streptococcus or staphylococcus)	7
Lice	2–5
Scabies	30–45

Isolation:

- Restriction of movement in the diseased/sick during the period of communicability.

Effective in:	**Not effective in:**
Respiratory & skin infections:	Mumps
Influenza, streptococcus	Typhoid
Diphtheria, chicken pox	Hepatitis A

Gastrointestinal:

- Shigellosis, salmonellosis
  - ✓ Pneumonic plague – 5 to 7 days isolation
  - ✓ Bubonic plague – 7 to 10 days isolation

Chemical isolation:

- Treatment in home & rendering the patient non infectious
  - ✓ TB, STD, Leprosy
  - ✓ Contacts of swine flu patients

Ring isolation/Ring immunization:

- A type of chemical isolation
- Poliomyelitis, measles, small pox

Quarantine:

- Restriction of movement in apparently healthy population (may be exposed)
- Duration: Maximum incubation period known.
- Done for people from endemic areas
  Eg: Zika, Ebola
- It is under international regulations

Modified Quarantine

- For contacts of communicable disease
- Measles, swine flu

Disease	Duration of isolation
Chickenpox	Until all lesions crusted; usually about 6 days after onset of rash
Measles	From the onset of catarrhal stage through 3rd days of rash
Cholera, Diphtheria	3 days after tetracyclines started, until 48 hours of antibiotics (or negative cultures after treatment0)
Shigellosis salmonellosis	Until 3 consecutive negative stool cultures
Hepatitis A	3 weeks of onset
Influenza	3 days after onset
Polio	2 weeks adult, 6 weeks pediatric
Tuberculosis (Sputus +)	Until 3 weeks of effective chemotherapy
Herpes zoster	6 days after onset of rash
Mumps	Until swelling subsides
Pertussis	4 weeks or until paroxysms cease
Meningococcal meningitis	Until the first 6 hours of effective antibiotic therapy are completed
Streptococcal pharyngitis	Until the first 6 hours of effective antibiotic therapy are completed

Chemoprophylaxis:

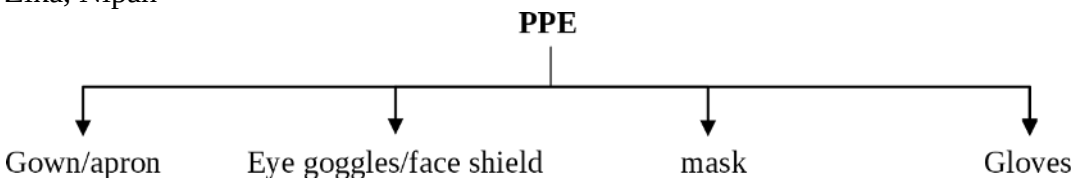
Disease	Chemoprophylaxis
Influenza	Oseltamivir
Meningococcal	Ciprofloxacin, ceftriaxone
Cholera	Tetracycline, Furazoidone
Diphtheria	Erythromycin
Pneumonic plague	Tetracycline
Malaria	Doxycycline, mefloquine
Tuberculosis	INH

Investigation of epidemic:

1. Verification of diagnosis
2. Confirmation of epidemic:
   - ✓ No. of population that is affected
3. Defining population at risk
4. Rapid search for cases:
   - ✓ Approximate prevalence of the disease
5. Data analysis
6. Formulate hypothesis – To find cause of the disease
7. Test hypothesis
8. Evaluate ecological factors
9. Further investigation for risk
   - ✓ For prevention of outbreak
10. Report writing & dissemination

Personal Protection Equipment (PPE):

- Ebola, Zika, Nipah

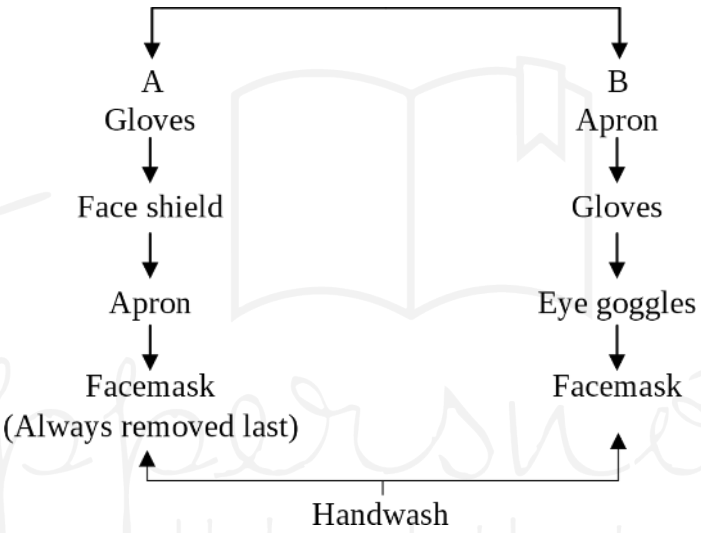


High risk disease (Ebola): Double protection required

Wearing

Apron
↓
Mask
↓
Eye Goggle
↓
Gloves

Removing the PPE



- Mask is always removed outside the isolation ward

Health Care System In India

NHM:

The National Health Mission (NHM) encompasses its two Sub - Missions:

- National Rural Health Mission (NRHM) -2005
- National Urban Health Mission (NUHM)-2013

AIM - Health System Strengthening in rural and urban areas:

The main programmatic components include:

Reproductive-Maternal- Neonatal-Child and Adolescent Health (RMNCH+A), and Communicable and Non- communicable disease.

NHM:

- **Based on 4 principles:**
  - ✓ Equity
  - ✓ Equality
  - ✓ Effectivity
  - ✓ Efficiency

- **5 Approaches to this programs:**
  - ✓ Communitize
  - ✓ Management capacity
  - ✓ Flexible financing
  - ✓ HR management
  - ✓ Quality IPHS (Indian Public Health Standards)
- **NHM is an Umbrella program, all health programs of the country comes under this**.
- The logo – has 1 daughter in a family.
  Stating – NRR = 1
  (Net Reproductive Rate)

Organisation Of NHM:

District Hospital (DH) - Administration

↓

Community Health centre (CHC)

↓
- Plain Area(PA) → 1,20,000
- Hilly/forest/tribal → 80,000 area (HFTA)

Primary Health centre (PHC)

↓
- Pain Area → 30,000[Q]
- HFTA → 20,000

Sub-Centre (SC)

↓
- PA → 5000
- HFTA 3000

ASHA-Workers → 1 ASHA is for 1000 population at village level[Q]

Staff at various set up:-
- ASHA → Village level
- SC → MPW – Male & Female (Multi purpose worker)
- PHC → Medical officer in charge (MO)
  - ✓ Ayush (Ayurveda, Yoga, Unani, Siddha, Homeopathy)
  - ✓ ANM
  - ✓ Pharmacist
  - ✓ Health assistant
- CHC → Specialists (General medicine, surgery, gynecologist, pediatrician + Anesthesiologist + Ophthalmologist + ANM + Pharmacist + OT Technician + Lab technicians)
- District hospital → All clinical specialities + specialized labs + program managers.

Asha workers:
- 25-39 yr of age, at least 10th pass should be married.
- Preferably a mother (not > 2 children)

Function:-
- Work for all NHP
- Members of village health sanitation & nutrition committee.
- Once a month "Nutrition Day" is celebrated & ASH will coordinate it.
- Family planning → Home delivery of condoms.
- Responsible for the health care of the community.
- Drug depot holders in community (Drugs are kept in Anganwadi, ASHA worker is responsible for issuing the drug)
- ASHA → Implementation of program at the lowest level.

Multi purpose worker:

- MPW work at Gram Panchayat level

Male MPW: Functions

- NVBDCP – Implementation
- Water quality in the Area
- Take part in OPD Every day & conduct survey
- Maintain record / Register in sub-centre
- Procurement of drugs from PHC to ASHA worker.

Female MPW:- Functions

- MCH, ANC, PNC, Immunizations, Family planning
- OPD + Daily survey
- Maintenance of sub-centre.

Health assistant:-

- Important link between doctor of PHC grass root level workers.
- 1 medical officer will have → 12 MPW, 30 ASHA under him.
- The management is done by health assistant.
- Responsible for maintenance of records.
- Procurement of drugs & stock keeping.

Centres v/s number of beds

- **Village** – No beds
- **Subcentre**
  A – No delivery service
- No beds
  B – Delivery service
- K/a MCH – SC
- 2 beds
- **PHC – 4-6** beds
- **CHC – 30** beds
- **DH - >80** beds

Sub centres → 2 types A & B

- { Low load
  High load - > 20 deliveris/months.

PHC: - 24 x 7 functioning health centre

- A - <20 deliveries/day
- B - >20 deliveries/day
  - Less load → 20-30 delivery/day
  - Heavy load → >30 delivery/day

Rogi Kalyan Samiti:

- Community participation for management of health centre.

Health personnel are in various centres:

Suggested norms of Health personnel

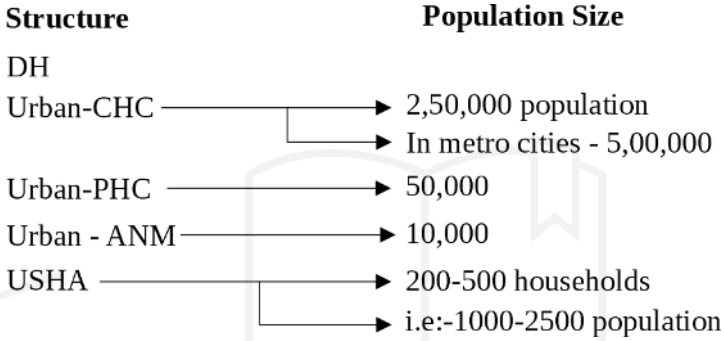
Category of personnel	Norms suggested
Nurses	1 per 5,000 population
Health worker female & male	1 per 5,000 population in plain area and 3,000 population in tribal & hilly areas.

Trained dai	One for each village
Health Assistant (male & female)	1 per 30,000 populations in plain area and 20,000 population in tribal & hilly areas. Provides supportive supervision to 6 health workers.
Pharmacists	1 per 10,000 population
Lab technicians	1 per 10,000 population
ASHA	1 per 10,00 population

- RKS – CHC → 46-52
- PHC → 13-20
- Sub health centre → 2-6
- Village → 1 ASHA

Anganwadi worker
- Under ICDS for 400-800 population
- Receive 4 month training

Village health guide → 200 hrs of training
ASHA worker → 23 days training
NUHM:



Functions of Community Health Nurse:
- Quick identification of patients.
- Assisting in the diagnosis, laboratory examination.
- Giving treatment to patients.
- Providing care to patients at home.
- Health education.
- Assisting in achieving the targets.
- Providing supervision and training.
- Preparation and maintenance of reports.
- Evaluation of health programmes.
- Ensuring participation of the community and its leaders for the success programme.
- Try to change unhealthy religious faiths and superstitions.
- Exchange knowledge and information.
- Time and implementation of the programme should be convenient for the community.

Difference Between NRHM & NUHM:

NRHM	**NUHM**
National rural health mission	National urban health mission
Improves rural health delivery system	Separate mission for urban areas and focuses on slum and other urban poor families.
Launched on 12 april, 2005	Launched on 1 may, 2013
Creation of ASHA (Accredited social health activists)	Creation of USHA (Urban social health activists)
1 ASHA = 1000 population	1 USHA = 1000-2500 beneficiaries 200-500 households
PHC/CHC are present to provide health services	PUHC/CUHC are present to provide health services.

Primary Health Care:

HEALTH/PRIMARY HEALTH CARE:

Health:

- A state of complete physical, mental, and social well being not merely in the absence of disease or infirmity. (WHO-concept of Health)

Health Care:

- As defined by the WHO as an essential health care made universally accessible to individuals and families in the community by means acceptable to them through their full participation and at a cost that the community and country can Afford to maintain at every stage of their development in the spirit of self determination.
- The Health care in India is divided into 3 section:
- **Primary health care**
  - ✓ 1st level of contact
  - ✓ Sub centre, primary health workers
  - ✓ Grass root level workers:
    - ASHA
    - USHA
    - Anganwdi visitors
    - Health visitors
    - Trainded dais
- **Secondary Health care**
  - ✓ Intermediate Health care
  - ✓ Community Health centre, district hospital, first referral units
- **Tertiary health care**
  - ✓ Specialized health care
  - ✓ Medical colleges, specialized hospital

- Health promotion
- Disease prevention
- Curative care
- Rehabilitative care

} Holistic Health care

- **Elements of Health care:**
  - ✓ Education
  - ✓ Locally endemic diseases care
  - ✓ Essential drug
  - ✓ MCH & family planning
  - ✓ Expanded immunisation programme

Universal immunisation programme of National immunisation schedule/mission Indradhanush)

- Nutrition
- Treatment of common diseases
- Safe water and sanitation
- **Principles of Health care:**

1. Equitable distribution
   - ✓ Priority given to the patients who requires the care most.
2. Community participation
3. Intersectoral coordination

   ICDS Program→ Ministry of Health & family welfare (MOHFW) + ministry of women & child development

   Poshan yojana → MOHFW + Ministry of food.

   Biomedical waste → Ministry of Health and family welfare + ministry of forest and environment.
4. Appropriate Technology →

   E.g.: IT Enabled system in T.B, Zn based ORS, Jai Vigyan mission (Rheumatic fever)

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RKS and Mahila Arogya Samiti:

- Rogi Kalyan Samiti
- Management of Health Care Facility

Mahila Arogya Samiti:

- In Urban Areas
- Management of Urban Health Centres
- Responsible for 50-100 houses (250 – 500 Population)

IPHS

- Indian public health standards
- Standards for the government
- NABH (National Accredition Board for hospitals)
- NABL (National Accredition Board for laboratories)

		Staff	KITS (A-P)
1. Subcentre	A	2	A,B,C
	B	3	
2. PHC	A	12-18	D
	B	14-21	
3. CHC		46-52	E-P

Global Health care:

- **MDG (Millenium Development Goals)**
  - ✓ Started in 2000 → 2015
  - ✓ 8 goals
- **SDG (Sustainable Developmental Goals)**
  - ✓ 2015 → 2030
  - ✓ 17 goals
  - ✓ Goal no. 3 → Health & well being

3.1	MMR < 70/lac	2030
3.2	NNMR <12/1000 USMR < 25/1000	2030
3.3	End - TB, HIV Malaria/ Neglected tropical diseases Hepatitis water borne disease	2030
3.4	Reduce 1/3 premature mortality from NCD	2030
3.5	Substance Abuse Prevent	
3.6	1/2 reduce deaths From RTA	2020

Immunization:

Immunization is the process whereby a person is made resistant to a disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease.

- **First vaccine** → Edward Jenner (Small Pox Vaccine).
- **Term 'vaccine'** → Louis Pasteur.
- **Term vaccination** → Edward Jenner.

National Immunization Schedule (NIS) for Infants, Children and Pregnant Women

Vaccine	When to give	Dose	Route	Site
For Pregnant Women				
TT-1	Early in pregnancy	0.5 ml	Intra-muscular	Upper Arm
TT-2	4 weeks after TT-1*	0.5 ml	Intra-muscular	Upper Arm
TT- Booster	If received 2 TT doses in a pregnancy within the last 3 yrs *	0.5 ml	Intra-muscular	Upper Arm

For Infants				
BCG	At birth or as early as possible till one year of age	0.1 ml (0.05 ml until 1 month age)	Intra-dermal	Left Upper Arm
Hepatitis B - Birth dose	At birth or as early as possible within 24 hours	0.5 ml	Intra-muscular	Antero-lateral side of mid-thigh
OPV-0	At birth or as early as possible within the first 15 days	2 drops	Oral	Oral
OPV 1, 2 & 3	At 6 weeks, 10 weeks & 14 weeks (OPV can be given till 5 years of age)	2 drops	Oral	Oral
Pentavalent 1, 2 & 3	At 6 weeks, 10 weeks & 14 weeks (can be given till one year of age)	0.5 ml	Intra-muscular	Antero-lateral side of mid-thigh
Rotavirus#	At 6 weeks, 10 weeks & 14 weeks (can be given till one year of age)	5 drops	Oral	Oral
IPV	Two fractional dose at 6 and 14 weeks of age	0.1 ml	Intra dermal two fractional dose	Intra-dermal: Right upper arm
Measles /MR 1 ^{5t} Dose$	9 completed months-12 months. (can be given till 5 years of age)	0.5 ml	Sub-cutaneous	Right upper Arm
JE - 1**	9 completed months-12 months.	0.5 ml	Sub-cutaneous	Left upper Arm
Vitamin A (1st dose)	At 9 completed months with measlesRubella	1 ml (1 lakh IU)	Oral	Oral
For Children				
DPT booster-1	16-24 months	0.5 ml	Intra-muscular	Antero-lateral side of mid-thigh
Measles/MR 2 nd dose $	16-24 months	0.5 ml	Sub-cutaneous	Right upper Arm
OPV Booster	16-24 months	2 drops	Oral	Oral
JE-2	16-24 months	0.5 ml	Sub-cutaneous	Left Upper Arm
Vitamin A*** (2nd to 9th dose)	16-18 months. Then one dose every 6 months up to the age of 5 years.	2 ml (2 lakh IU)	Oral	Oral
DPT Booster-2	5-6 years	0.5 ml .	Intra-muscular	Upper Arm
TT	10 years & 16 years	0.5 ml	Intra-muscular	Upper Arm

- *Give TT-2 or Booster doses before 36 weeks of pregnancy. However, give these even if more than 36 weeks have passed. Give TT to a woman in labour, if she has not previously received TT.
- **JE Vaccine is introduced in select endemic districts after the campaign.
- ***The 2nd to 9th doses of Vitamin A can be administered to children 1-5 years old during biannual rounds, in collaboration with ICDS.

- #Phased introduction, at present in Andhra Pradesh, Haryana, Himachal Pradesh and Orissa from 2016 & expanded in Madhya Pradesh, Assam, Rajasthan, and Tripura in February 2017 and planned in Tamil Nadu & Uttar Pradesh in 2017.
- $ Phased introduction, at present in five states namely Karnataka, Tamil Nadu, Goa, Lakshadweep and Puducherry. (As of Feb' 2017)

(National Immunization Schedule)

Live	**Killed**	**Toxoid**
BCG	IPV	Diphtheria
OPV	Pertussis	Tetanus
Measles	Rabies	
MMR	Hep-A	
Yellow fever	Meningococcal	
Live JE	KFD	
Live Hep A	JE killed	
Varicella	H1N1 KILLED	

Vaccine	**Protect from**
BCG	Tuberculosis
HepB (Birth dose)	Hepatitis-B
OPV-0 Dose,1,2,3 & B	Polio
f-IPV-1,2	Polio
PENTA-1,2,3	Diphtheria, Pertusis, Tetanus, Hepatitis-B, Hib
PCV-1,2,B	Pneumonia
ROTA-1,2,3	Diarrhoea
MR-1,2	Measles, Rubella
DPT-B1	Diphtheria, Pertusis, Tetanus

National immunization schedule:

- Component of UIP 1985
- Earlier name – EPI 1978
  - ✓ UIP is a part of RCH Programme under NHM.
  - ✓ UIP started in 1985 to prevent 6 vaccine preventable diseases.
    - Tuberculosis
    - polio
    - Measles
    - Diptheria
    - Pertussis
    - Tetanus
- **Pentavalent vaccine protects against:-**
  1. Diphtheria
  2. Pertussis
  3. Tetanus
  4. hepatitis B
  5. HiB
- Total vitamin-A Dose in NIS → 17 LAC IU.
- Total dose of Vit-A UPTO 5 YEARS→ 9 DOSE.
- Strength of Vit.A → 100,000 IU/ML.

Vaccines	Dose	Route	Site
BCG	0.1 ml	ID	Lt upperarm.
Hep. B	0.5 ml	IM	Anterolateral thigh.
DPT	0.5 ml	IM	Anterolateral thigh.
Measles	0.5 ml	SC	Rt upper arm
OPV	2 drops	Oral.	
Rota virus	5 drops	Oral.	
HiB	0.5 ml	IM	Upper arm
PCV	0.5 ml	IM	Rt. Upper arm
MR	0.5 ml	SC	Rt. Anterolateral thigh.
JE	0.5 ml	SC	Rt upper arm Triceps insertion
IPV	0.5 ml	IM	Rt. Antero lateral Lateral thigh
f IPV	0.1 ml	ID	Rt upper arm
Pentavalent	0.5 ml	IM	Lt anterolateral thigh.

At Birth	6 Week	10 Week	14 Week	9 Month	16-24 Months	5-6 years	10 yrs	16 yrs
OPV-0	OPV-1	OPV-2	OPV-3	MR-1	OPV Booster	DPT Booster-2	Td	Td
Hep B	Rota-1	Rota-2	Rota-3	Vit.A-1	Vit. A-2			
BCG	fIPV-1	Penta-2	fIPV-2	PCV booster	MR-2			
	PCV-1		PCV-2		DPT Booster-1			
	Penta-1		Penta-3					

No. of doses under NIS:

- OPV → 5
- TT → 7
- BCG → 1
- Diphtheria → 5
- Pertussis → 5
- Hep-B → 3
- Rota Viral → 3
- JE live → 2
- PCV → 3
- Measles → 2
- MR → 2
- IPV
  fIPV → 2
  Im → 1
- Vitamin A → 9

Delayed Immunization (under NIS)

- BCG → 1 Yr
- OPV → 5 Yr
- DPT → 7 Yr
- Hep.B → 1 Yr
- HiB → 6 Yr
- Rota viral → 8 month
- Measles → 5Yr
- JE → 15 Yr
- Vitamin –A → 5 Yr
- TT → No age limit

Vaccine	Strains
BCG	DANISH 1331
OPV	P1, P2, P3
Measles	Edmonston Zagreb
Mumps	Jeryll Lynn
Rubella	RA 27/3
Yellow fever	17D
Varicella	OKA strain
Malaria	RTS, S/A01, SF66

Toppersnotes Unleash the topper in you