Ministry of Information and Broadcasting
Government of India

Mission Indradhanush

Measles
Polio
Pertussis
Tetanus
TB
Diphtheria
Hepatitis B

Vaccines & Sera

Vaccination cover against 7 diseases to more than 89 lakh children by 2020

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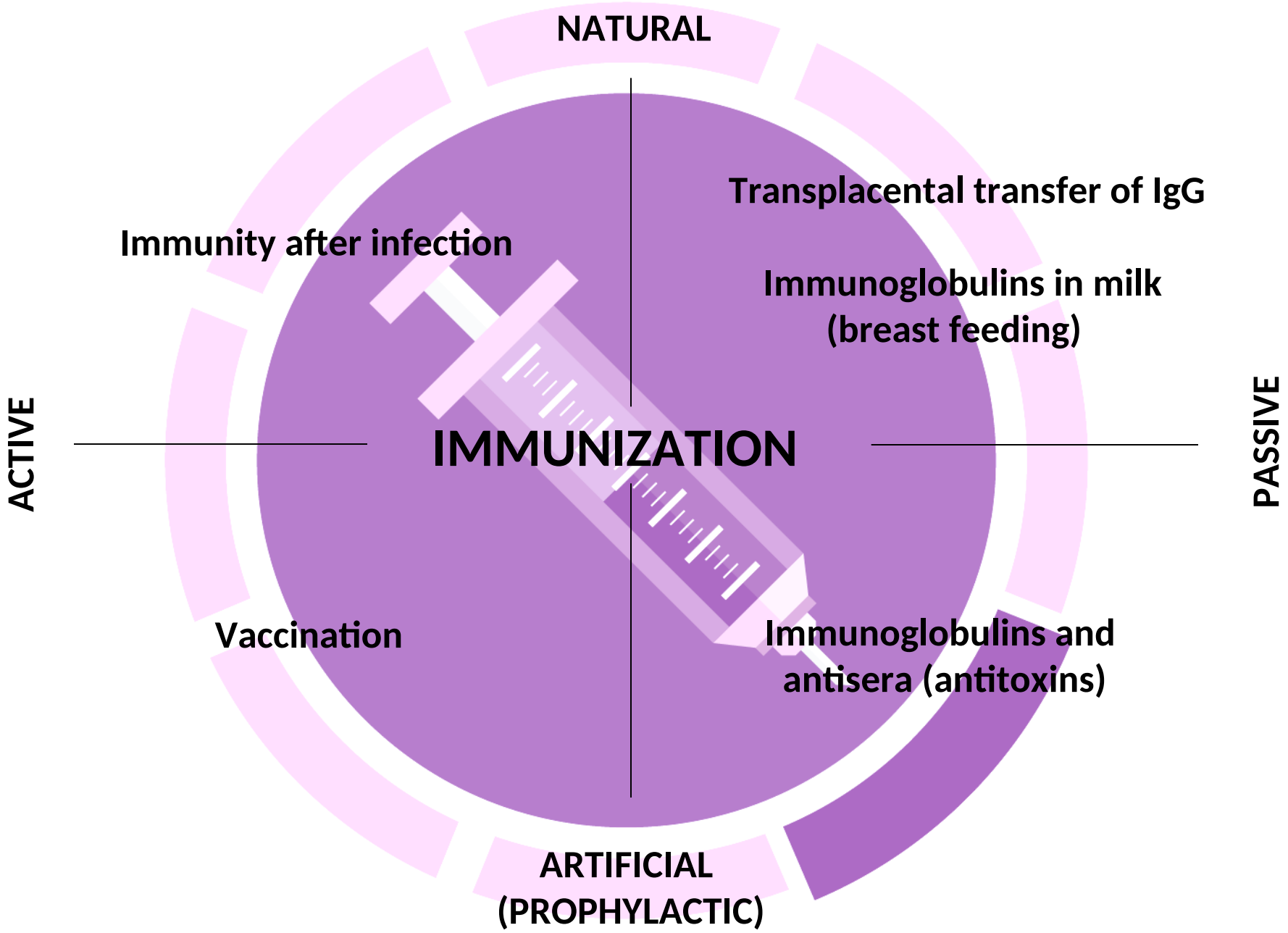
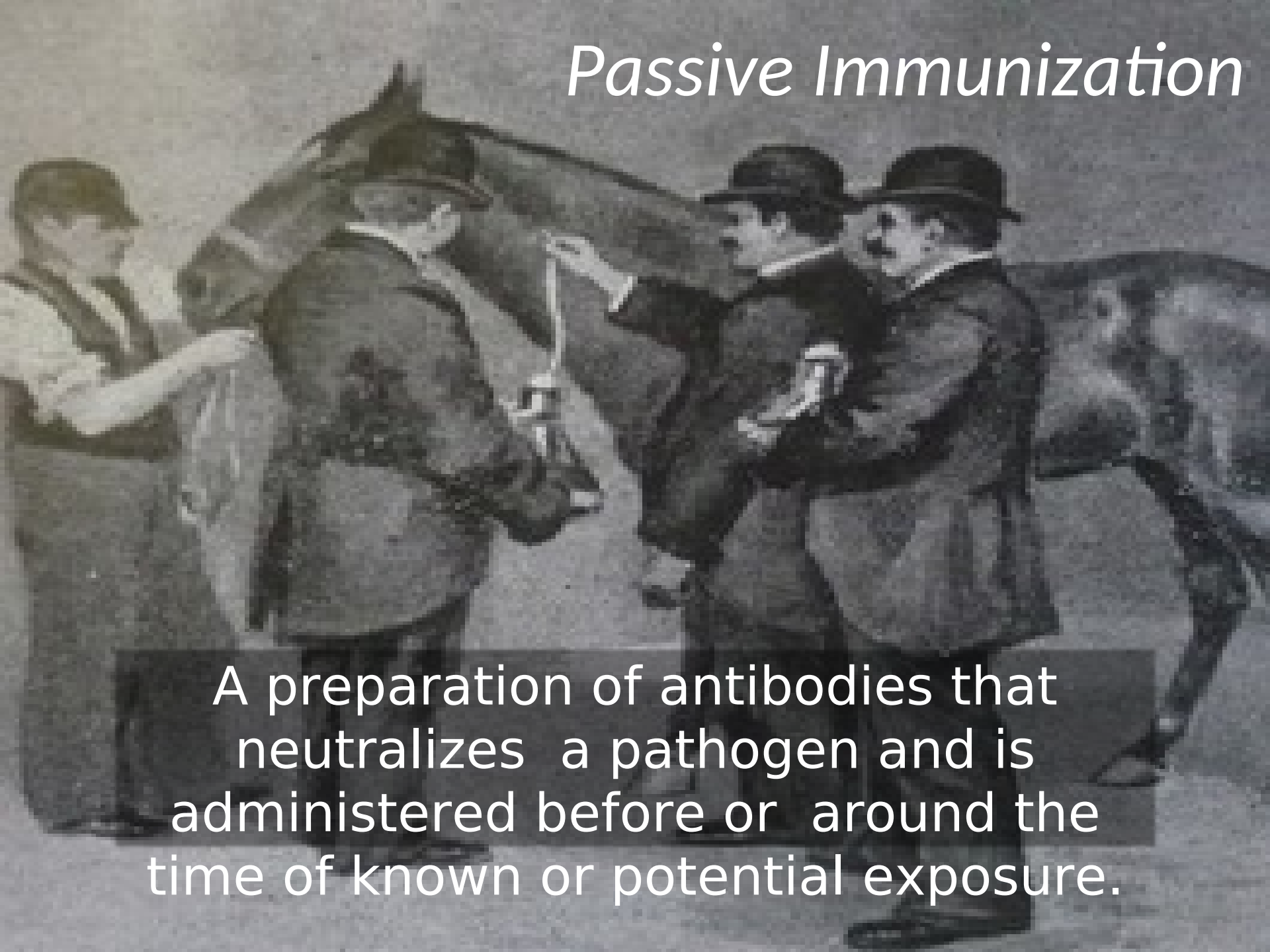

NATURAL
Transplacental transfer of IgG
Immunity after infection
Immunoglobulins in milk
(breast feeding)
ACTIVE
IMMUNIZATION
PASSIVE
Vaccination
Immunoglobulins and
antisera (antitoxins)
ARTIFICIAL
(PROPHYLACTIC)

Active Immunization

Stimulates the host's immune system to produce specific antibodies or cellular immune responses or both which would protect against or eliminate a disease.

Passive Immunization



A preparation of antibodies that neutralizes a pathogen and is administered before or around the time of known or potential exposure.

Vaccines

Provide an antigenic stimulus that does not cause disease but can produce long lasting, protective immunity

Types of Vaccines and Their Characteristics

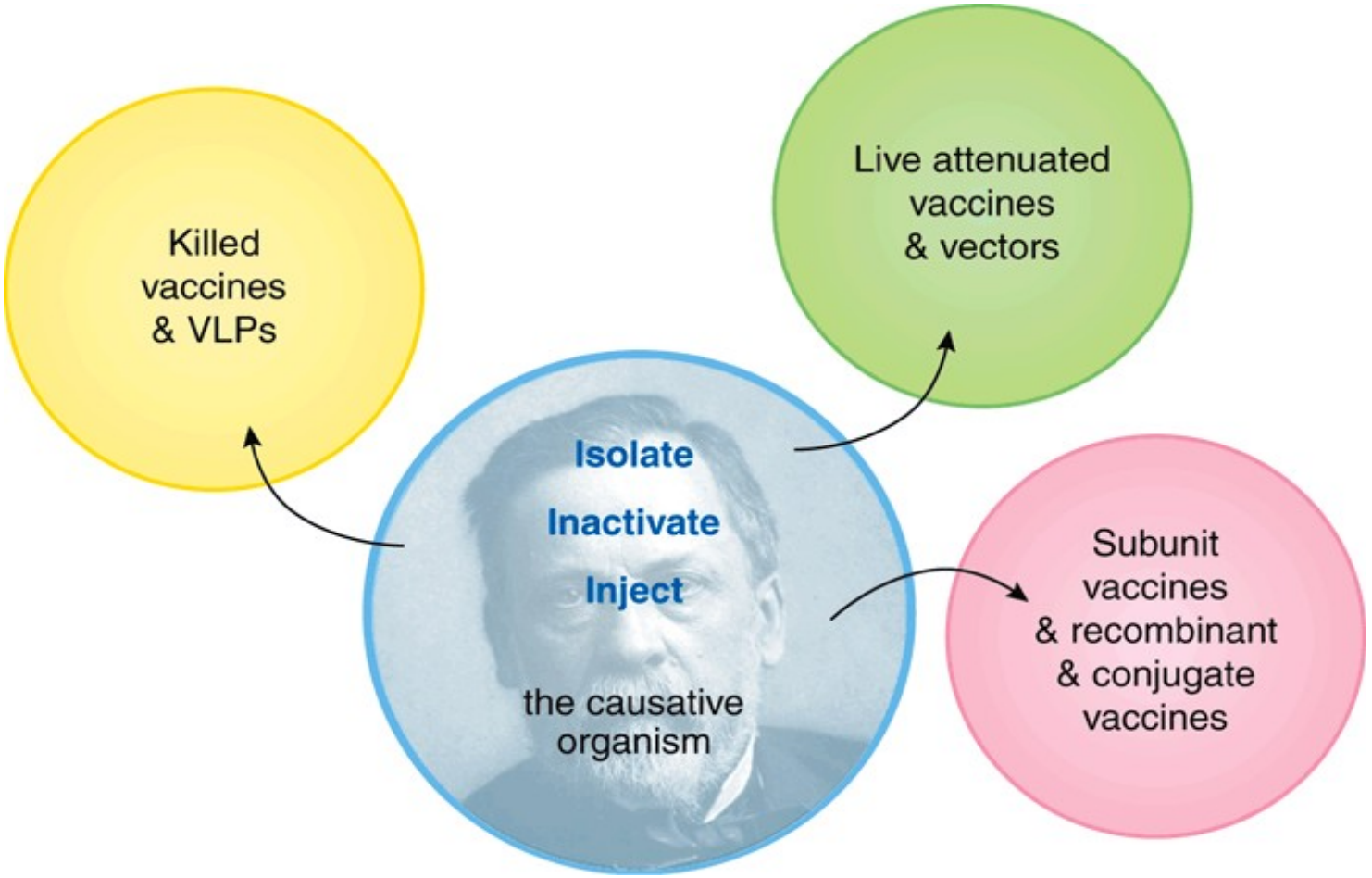


Table I. IAP Immunization Timetable 2016

I. IAP recommended vaccines for routine use

Age (completed weeks/months/years)	Vaccines	Comments
Birth	BCG OPV 0 Hep-B 1	Administer these vaccines to all newborns before hospital discharge
6 weeks	DTwP 1 IPV 1 Hep-B 2 Hib 1 Rotavirus 1 PCV 1	**DTP:** • DTaP vaccine/combinations should preferably be avoided for the primary series • DTaP vaccine/combinations should be preferred in certain specific circumstances/conditions only • No need of repeating/giving additional doses of whole-cell pertussis (wP) vaccine to a child who has earlier completed their primary schedule with acellular pertussis (aP) vaccine-containing products **Polio:**

		• All doses of IPV may be replaced with OPV if administration of the former is unfeasible • Additional doses of OPV on all supplementary immunization activities (SIAs) • Two doses of IPV instead of 3 for primary series if started at 8 weeks, and 8 weeks interval between the doses • No child should leave the facility without polio immunization (IPV or OPV), if indicated by the schedule • See footnotes under figure titled IAP recommended immunization schedule (with range) for recommendations on intradermal IPV **Rotavirus:** • 2 doses of RV1 and 3 doses of RV5 & RV 116E • RV1 should be employed in 10 & 14 week schedule, 10 & 14 week schedule of RV1 is found to be more immunogenic than 6 & 10 week schedule
10 weeks	DTwP 2 IPV 2 Hib 2 Rotavirus 2 PCV 2	**Rotavirus:** If RV1 is chosen, the first dose should be given at 10 weeks
14 weeks	DTwP 3	

	IPV 3 Hib 3 Rotavirus 3 PCV 3	**Rotavirus:** • Only 2 doses of RV1 are recommended. • If RV1 is chosen, the 2nd dose should be given at 14 weeks
6 months	OPV 1 Hep-B 3	**Hepatitis-B:** The final (3rd or 4th) dose in the HepB vaccine series should be administered no earlier than age 24 weeks and at least 16 weeks after the first dose.
9 months	OPV 2 MMR-1	**MMR:** • Measles-containing vaccine ideally should not be administered before completing 270 days or 9 months of life; • The 2nd dose must follow in 2nd year of life; • No need to give stand-alone measles vaccine
9-12 months	Typhoid Conjugate Vaccine	• Currently, two typhoid conjugate vaccines, Typbar-TCV® and PedaTyph® available in Indian market; either can be used • An interval of at least 4 weeks with the MMR vaccine should be maintained while administering this vaccine
12 months	Hep-A 1	**Hepatitis A:** • Single dose for live attenuated H2-strain Hep-A vaccine • Two doses for all inactivated Hep-A vaccines are

		recommended
15 months	MMR 2 Varicella 1 PCV booster	**MMR:** • The 2nd dose must follow in 2nd year of life • However, it can be given at anytime 4-8 weeks after the 1st dose **Varicella:** The risk of breakthrough varicella is lower if given 15 months onwards
16 to 18 months	DTwP B1/DTaP B1 IPV B1 Hib B1	The first booster (4thth dose) may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose. **DTP:** • 1st & 2nd boosters should preferably be of DTwP • Considering a higher reactogenicity of DTwP, DTaP can be considered for the boosters
18 months	Hep-A 2	**Hepatitis A:** 2nd dose for inactivated vaccines only
2 years	Booster of Typhoid Conjugate Vaccine	• A booster dose of Typhoid conjugate vaccine (TCV), if primary dose is given at 9-12 months • A dose of Typhoid Vi-polysaccharide (Vi-PS) vaccine

		can be given if conjugate vaccine is not available or feasible; • Revaccination every 3 years with Vi-polysaccharide vaccine • Typhoid conjugate vaccine should be preferred over Vi- PS vaccine
4 to 6 years	DTwP B2/DTaP B2 OPV 3 Varicella 2 MMR 3	**Varicella:** the 2nd dose can be given at anytime 3 months after the 1st dose. **MMR:** the 3rd dose is recommended at 4-6 years of age.
10 to 12 years	Tdap/Td HPV	**Tdap:** is preferred to Td followed by Td every 10 years **HPV:** • Only 2 doses of either of the two HPV vaccines for adolescent/preadolescent girls aged 9-14 years; • For girls 15 years and older, and immunocompromised individuals 3 doses are recommended • For two-dose schedule, the minimum interval between doses should be 6 months. • For 3 dose schedule, the doses can be administered at 0, 1-2 (depending on brand) and 6 months

II. IAP recommended vaccines for High-risk* children (Vaccines under special circumstances) #:

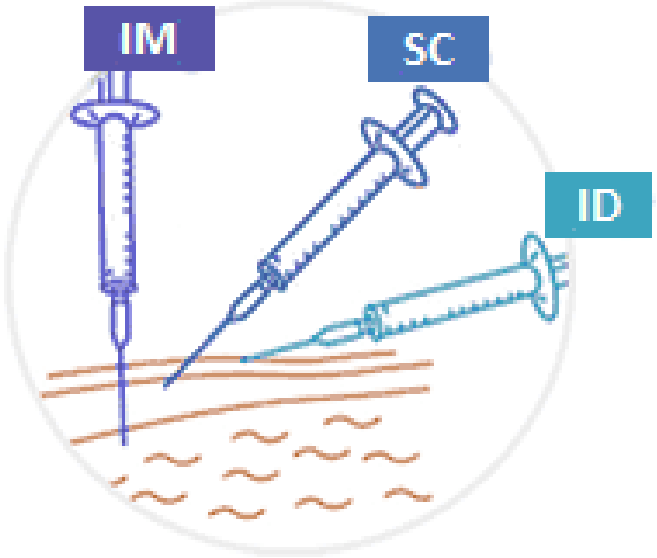
1-Influenza Vaccine
2-Meningococcal Vaccine
3-Japanese Encephalitis Vaccine
4-Cholera Vaccine
5-Rabies Vaccine
6-Yellow Fever Vaccine
7-Pneumococcal Polysaccharide vaccine (PPSV 23)

High-risk category of children:

- Congenital or acquired immunodeficiency (including HIV infection),
- Chronic cardiac, pulmonary (including asthma if treated with prolonged high-dose oral corticosteroids), hematologic, renal (including nephrotic syndrome), liver disease and diabetes mellitus
- Children on long term steroids, salicylates, immunosuppressive or radiation therapy
- Diabetes mellitus, Cerebrospinal fluid leak, Cochlear implant, Malignancies,
- Children with functional/ anatomic asplenia/ hyposplenia
- During disease outbreaks
- Laboratory personnel and healthcare workers
- Travelers
- Children having pets in home
- Children perceived with higher threat of being bitten by dogs such as hostellers, risk of stray dog menace while going outdoor.

For details see footnotes under figure titled 'IAP recommended immunization schedule (with range)'

- **Oral**
  - OPV
  - Rotavirus
- **Intramuscular (IM)**
  - DTwP, DTaP, DT, Td, TT
  - Hepatitis B
  - IPV
  - Hib
  - PCV-7
- **Subcutaneous (SC)**
  - Measles
  - Yellow fever
- **Intradermal (ID)**
  - BCG



- **For Infants**

Vaccine	When to give	Dose	Route	Site
BCG	At birth or as early as possible till one year of age	0.1ml	Intra – dermal	Left upper arm
Hepatitis B	At birth or as early as possible within 24 hours	0.5ml	Intra- muscular	Antero lateral aspect 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 6,10 & 14 weeks	2 drops	Oral	Oral
DPT-1,2 & 3	At 6,10 & 14 weeks	0.5ml	Intra-muscular	Antero lateral aspect of mid thigh
Hepatitis B 1,2 & 3	At 6,10 and 14 weeks	0.5ml	Intra-muscular	Antero lateral aspect of mid thigh
Measles	9 completed months – 12 months	0.5ml	Sub-cutaneous	Right upper arm
Vitamin A (1st dose)	At 9 months with measles	1ml(1 lakh IU)	Oral	oral

How many vaccines will your child get?

AT BIRTH
- HepB

ONE MONTH
- HepB

TWO MONTHS
- RV
- DTaP - each shot has 3 vaccines
- Hib - each shot has 2 vaccines
- PCV - each shot has 8 vaccines
- IPV

4 MONTHS
- RV
- DTaP - each shot has 3 vaccines
- Hib - each shot has 2 vaccines
- PCV - each shot has 8 vaccines
- IPV

6 MONTHS
- RV
- DTaP - each shot has 3 vaccines
- Flu
- HepB
- Hib - each shot has 2 vaccines
- PCV - each shot has 8 vaccines
- IPV

12 MONTHS
- HepA
- Hib - each shot has 2 vaccines
- PCV - each shot has 8 vaccines
- MMR - each shot has 3 vaccines
- Varicella

15 MONTHS
- DTaP - each shot has 3 vaccines

18 MONTHS
- Flu - annually throughout lifetime
- HepA

4-6 YEARS
- DTaP - each shot has 3 vaccines
- IPV
- MMR - each shot has 3 vaccines
- Varicella

11-12 YEARS
- MCV
- Tdap
- HPV- 3 doses

Too many.

Your child may receive up to 81 vaccines by six years of age.

Vaccination injects bacteria, viruses, genetic material and many other biological and toxic chemicals (mercury, aluminum, formaldehyde, acids) deep into the child's body, where they have access to internal organs (including the brain). The results are a host of illnesses that were rare or non-existent before mass vaccination. These conditions include, but are not limited to, the following:

Autism, juvenile diabetes, juvenile rheumatoid arthritis, reading problems, language difficulties, asthma, allergies, attention deficit disorder (ADD), ADHD, brain tumors, cancer, osteosarcoma, lupus erythematosus, dyslexia, abnormal behavior, deafness, hearing impairment, autoimmune diseases, hyperactivity, death, inflammatory bowel disease, irritable bowel disease, juvenile arthritis, brain inflammation, infantile spasms, seizures, epilepsy, convulsions, increased intracranial pressure, demyelinating disease, SIDS (crib death), Asperger's syndrome, pervasive developmental disorder, vision problems, otitis media (ear infection), upper respiratory tract infection, vomiting, fever, loss of I.Q. points, gastroenteritis, rash, croup, hives, eczema, colitis, choking, holding breath, thrush, wheezing, pneumonia, bronchiolitis, influenza, vomiting, conjunctivitis, focal swelling, irritable child, permanent brain damage, encephalopathy (brain inflammation), sepsis, arthralgias (painful joints), nausea, headache, cardiac arrhythmias, syncope (fainting), cranial nerve paralysis, anaphylaxis, Guillain-Barré syndrome, Kawasaki disease (inflammation of heart and blood vessels), skin diseases, skin rashes, kidney disorders (including kidney failure), shingles, tuberculosis, carpal tunnel syndrome, paralytic disease, aseptic meningitis, Hodgkin's Disease and non-Hodgkin's lymphoma, atopic dermatitis, skin conditions

Vaccines

DTaP/Tdap	Diptheria, tetanus & pertussis
Flu	Influenza
HepA	Hepatitis A
HepB	Hepatitis B
Hib	Haemophilus influenzae type b
HPV	Human papillomavirus
IPV	Inactivated poliovirus
MCV	Meningococcal
MMR	Measles, mumps & rubella
PCV	Pneumococcal conjugate
RV	Rotavirus gastroenteritis
Varicella	Chickenpox

Note: These numbers, based on the 2009 CDC recommended schedule, are conservative as they do not include shots that are recommended for certain populations and there are currently over 200 additional vaccines in development.

TDI • P40Pv3

Make an informed choice.

Live (attenuated) vaccines

Principle

Imunization with attenuated (weakened) pathogen

Examples

Several viral vaccines (against polio (oral-Sabin), mumps, measles, rubella, varicella) and some bacterial (BCG for tuberculosis)...

Advantages

Induction of both humoral (Abs) and cellular response (CTLs)

Long-lasting immunity (administered in one or two doses)

Limitations

Risk in immunocompromised persons

Instability (thermolabile)

BCG (limited efficacy)

Inactivated (killed) vaccines

Principle

munization with killed (inactivated) whole infective agents

Examples

accines against pertussis, typhoid, polio (Salk), influenza...

Advantages

Greater stability

Safety (no risk of infection)

Limitations

Low immunogenicity (only Ab induced, adjuvant required)

Shorter immunity (multiple, booster administration required)

Subunit (antigenic) vaccines

Principle

Immunization with structural antigens (protein or polysaccharide) of pathogens or their products (e.g. toxoid)

Examples

accine against pertussis (acellular), tetanus and diphteria (toxoid),
fluenza (Hemagglutinin and Neuraminidase), hepatitis B (HBsAg) and
uman papilloma virus (L1 protein) – so-called *virus-like particles* (VLP
neumococcal and meningococcal polysaccharide vaccines...

Advantages

Same as for inactivated vaccines (greater safety)

Limitations

Same as for inactivated vaccines (lower

Toxoids

…are inactivated toxins, are vaccines directed at the toxins produced by a pathogen. The tetanus and diphtheria toxoids have long been part of the standard childhood immunization series. They require a series of injections for full immunity, followed by boosters every 10 years.

Combination vaccines

Examples DT,
DPT/Hib, etc.
MMR, MMRV

Advantages: only one needle at a visit
may reduce number of visits
reduces costs of administration
geographic tailoring

Disadvantages: loss of immunogenicity due to competition

Immunotherapy – preformed Ab

Immune serum globulin –

- Gamma-globulin contains immunoglobulin extracted from the pooled blood of at least 1,000 human donors
- Treatment of choice for preventing measles, hepatitis A and replacing Ab in the immune deficient
- Lasts 2-3 months

Sources of Passive Immunity

- Almost all blood or blood products
- Homologous pooled human antibody (immune globulin)
- Homologous human hyperimmune globulin
- Heterologous hyperimmune serum (antitoxin)

Classification the serum preparations

- **homogeneous serum**: serum obtained from blood donor volunteers, have been immunized.
- **heterogeneous serum**: serum obtained from blood of animals(horse) hyperimmunized.

Antisera from horse

- Tetanus antitoxin
- Gas gangrene antitoxin
- Diphtheria antitoxin
- Anti rabies serum
- Anti-snake venom polyvalent (cobra, 2 vipers, krait)

Immune globulins (human)

- Normal human gamma globulin
- Anti-D immune globulin
- Tetanus immune globulin
- Rabies immune globulin
- Hepatitis-B immune globulin

Hypersensitivity reactions by injection of the heterogeneous serum

- Anaphylactic shock

Type I, or anaphylactic, reactions often occur within 2 to 30 minutes after a person sensitized to an antigen is re-exposed to that antigen. Anaphylaxis means opposite of protected," from the prefix ana-, meaning against, and the Greek phylaxis, meaning protection. Anaphylaxis is an inclusive term for the reactions caused when certain antigens combine with IgE antibodies.

Anaphylactic responses can be systemic reactions, which produce shock and breathing difficulties and are sometimes fatal, or localized reactions, which include common allergic conditions such as hay fever, asthma, and hives (slightly raised, often itchy and reddened areas of the skin).

- Serum Sickness

This is a systemic form of hypersensitivity of immediate reaction. It appears 7 to 12 days following single injection of high concentration of foreign serum


рахмат
danke
謝謝
ngiyabonga
spas
teşekkür ederim
Баярлалаа
mersi
kia ora
barka
welalin
tack
mahalo
tapadh leat
спасибо
faafetai lava
vinaka
blagodaram
dank je
misaotra
paldies
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dankon
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ευχαριστώ
diolch
dhanyavadagalu
shukriya
mercê
мерси
তোমাকে ধন্যবাদ
감사합니다
xièxie
merci