

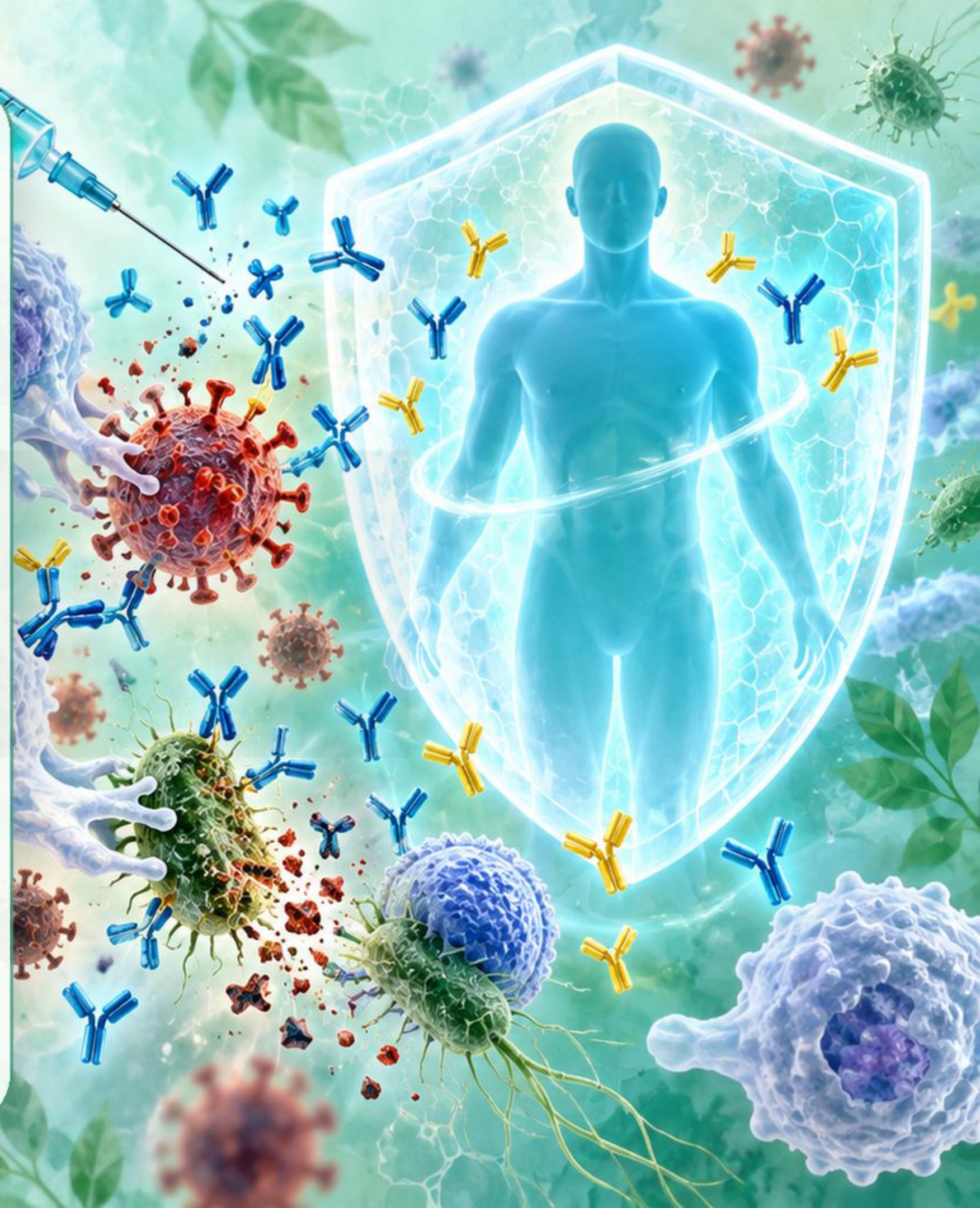
BIOLOGY • CLASS 12

7

CHAPTER

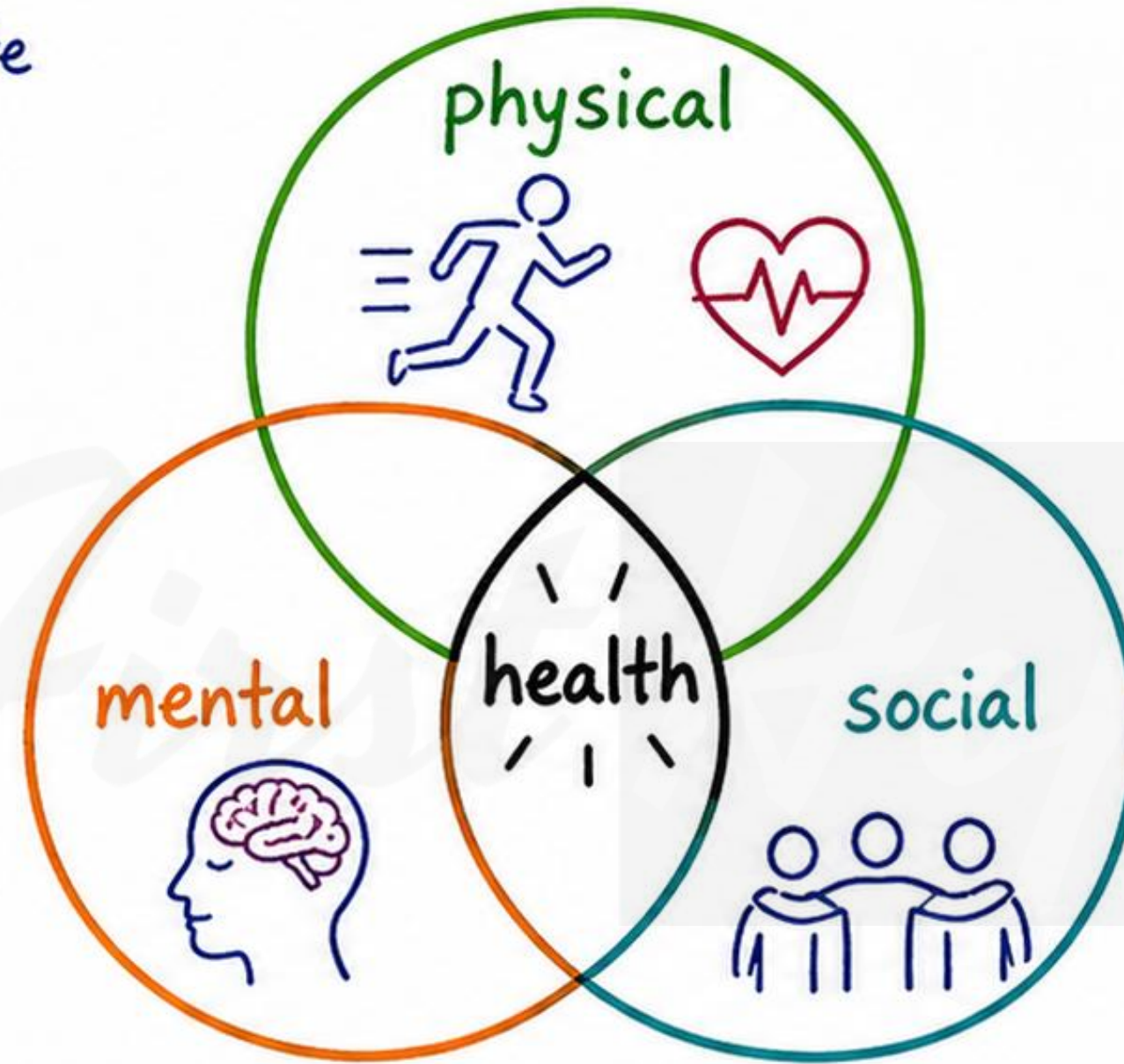
Human Health and Disease

CHAPTER NOTES



HEALTH AND DISEASE: WHOLE-PERSON WELL-BEING

- **HEALTH** = a state of complete physical, mental and social well-being; it is not merely absence of disease.
- Mind and mental state can influence immunity through the **nervous system** and **endocrine system**.
→ These systems communicate with the **immune system**.
- Good health improves work efficiency, productivity and longevity, and helps reduce infant and maternal mortality.
- **DISEASE** = a condition in which one or more organs or body systems do not function normally, producing **signs** and **symptoms**.



PERSONAL FOUNDATIONS:



- Balanced diet



- Safe water and food



- Personal hygiene



- Regular exercise or yoga



- Adequate rest

PUBLIC-HEALTH FOUNDATIONS:



- Vaccination



- Sanitation and waste disposal



- Safe food and water supplies



- Vector control

CAUSES OF ILL HEALTH AND DISEASE TYPES

1. THREE MAJOR INFLUENCES ON HEALTH

ILL HEALTH

① Genetic disorder

defects or deficiencies present from birth or inherited from parents.

② Infection

invasion and multiplication of disease-causing organisms.

③ Lifestyle and environment

food, water, hygiene, rest, exercise, habits, pollution and social conditions.

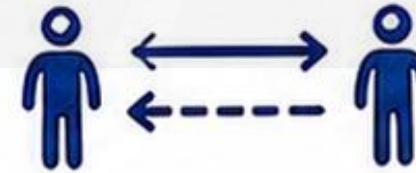
2. DISEASE TYPES

INFECTIOUS (COMMUNICABLE)

- caused by pathogens
- can spread directly or indirectly.

EXAMPLES:

typhoid, pneumonia, malaria, ringworm, HIV infection.



NON-INFECTIOUS (NON-COMMUNICABLE)

- do not spread from person to person.

EXAMPLES:

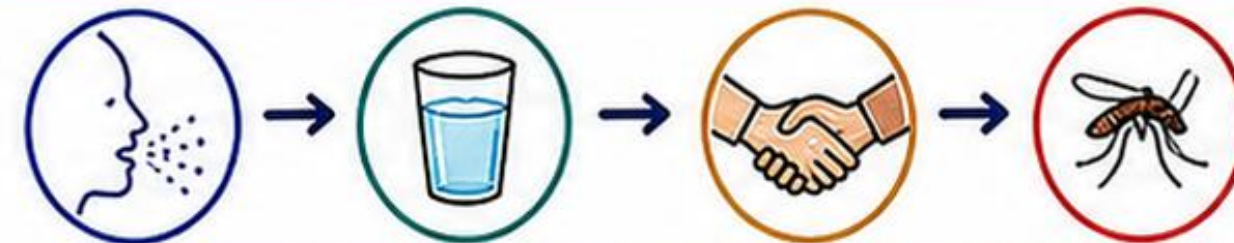
genetic disorders, many cancers, nutritional disorders, lifestyle-related diseases.



- ③ Disease may affect the structure or function of one or more organs/body systems and produces signs and symptoms.



- ④ IMPORTANT DISTINCTION: “infectious” does not always mean “easily spread”; route and risk depend on the pathogen.

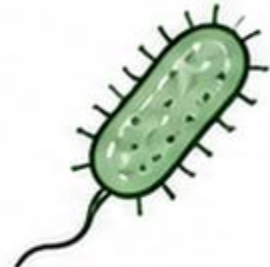


PATHOGENS, INFECTION AND TRANSMISSION

Pathogen = a disease-causing organism or infectious agent.

Main pathogen groups (with examples)

Bacteria



e.g., Salmonella, Mycobacterium

Viruses



e.g., Influenza virus, HIV

Fungi



e.g., Candida, Trichophyton

Protozoans



e.g., Plasmodium, Entamoeba

Helminths



e.g., Ascaris (roundworm), Taenia (tapeworm)

★ Important distinction:

A parasite lives in or on a host and gets nourishment from it.

Many parasites are pathogens, but not every pathogen is a parasite.

Routes of entry / spread

- Droplets or aerosols
- Contaminated food or water
- Vectors such as mosquitoes
- Blood, sexual contact or shared needles
- Contaminated hands/objects
- Soil or skin contact

Process of disease (sequence)

Exposure

Contact of host with pathogen

entry into host

Pathogen enters through a route of entry

survival and multiplication

Pathogen survives and multiplies inside the host

tissue or organ damage / altered function

Damage to cells, tissues or organs; functions change

signs and symptoms

Visible or felt changes in the host



Remember:

Infection does not always produce noticeable disease; outcome depends on the pathogen, dose and host immunity.

Prevention (simple steps to reduce infection and transmission)



Hand hygiene



Safe food and water



Cough etiquette



Vector control

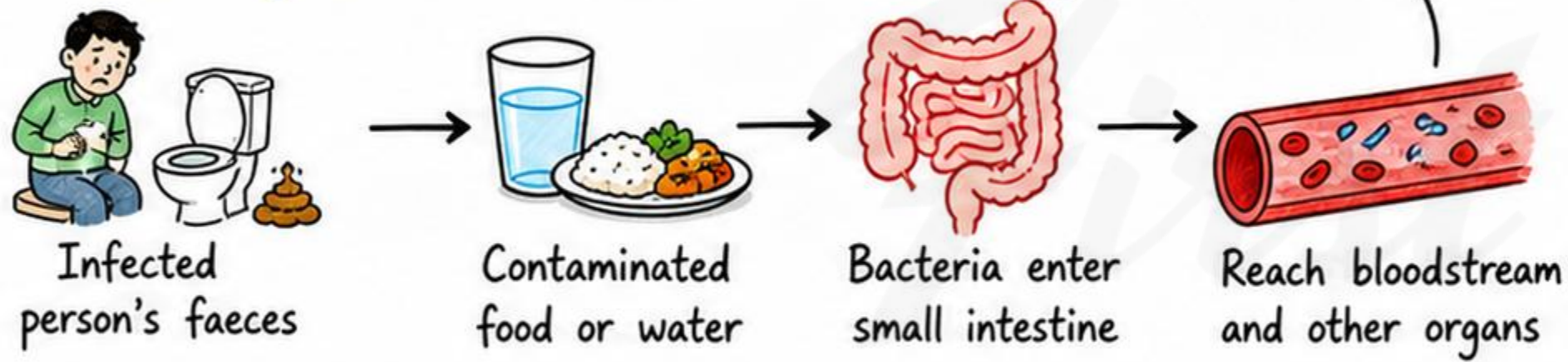


Safe blood/needle practices

TYPHOID: CAUSE, SPREAD, SYMPTOMS AND PREVENTION

① Cause and spread:

- Caused by the bacterium *Salmonella Typhi*.
- Faecal-oral transmission through food or water contaminated with an infected person's faeces.
- Bacteria enter through the small intestine, then may reach the bloodstream and other organs.



③ Diagnosis:



- Blood culture is especially useful early; stool culture or other suitable laboratory tests may also be used.
- Widal test may support diagnosis, but it should not be used alone.

★ Key distinction: Carrier = an infected person who can spread a pathogen even without symptoms.

② Symptoms:

- Sustained high fever (about 39–40 °C), weakness, headache, abdominal pain and loss of appetite.
- Constipation or diarrhoea may occur.
- Severe cases may cause intestinal bleeding or perforation.



★ Historical example:

"Typhoid Mary" (Mary Mallon) was a symptom-free carrier who transmitted the bacterium while working as a cook.



④ Prevention:





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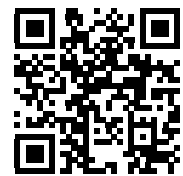


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