

# SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES



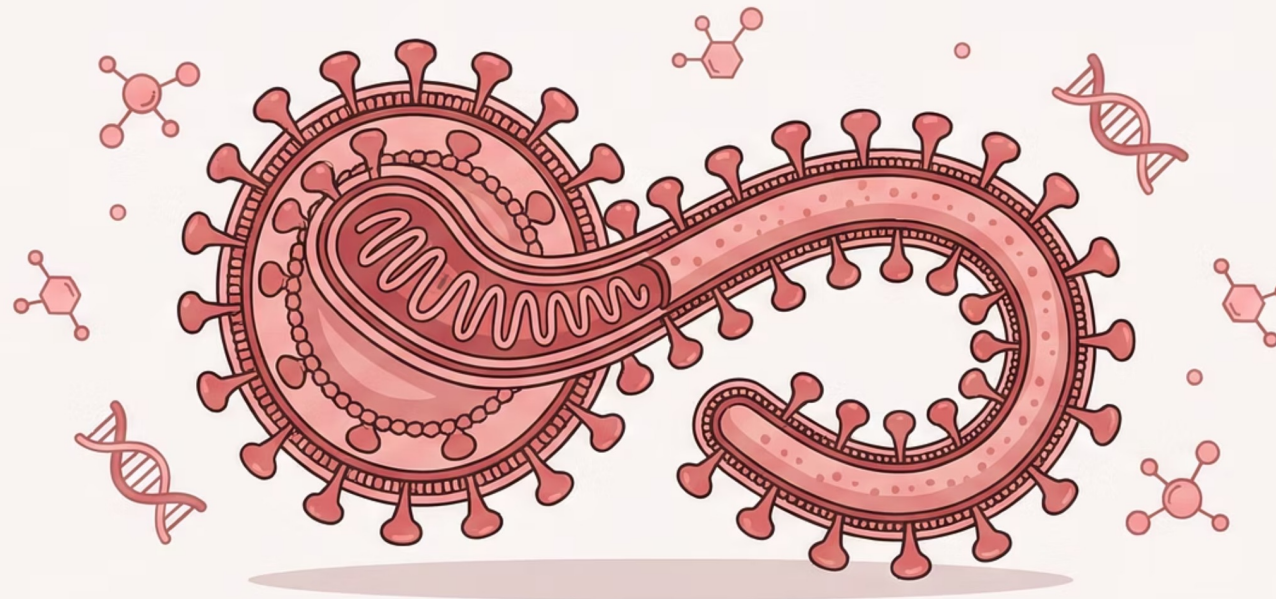
*Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai*  
*Approved by Pharmacy Council of India, New Delhi.*  
**Coimbatore -641035**

COURSE NAME: SOCIAL AND PREVENTIVE PHARMACY (BP 802 T)

B.PHARM. VIII SEM / IV YEAR

UNIT II: TOPIC 3: GENERAL PRINCIPLES OF PREVENTION AND CONTROL OF EBOLA

# Epidemiology and Pathophysiology of Ebola Virus: Understanding a Deadly Pathogen



A comprehensive exploration of one of the world's most deadly infectious diseases, from viral structure to clinical impact.

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# The Deadly Reality

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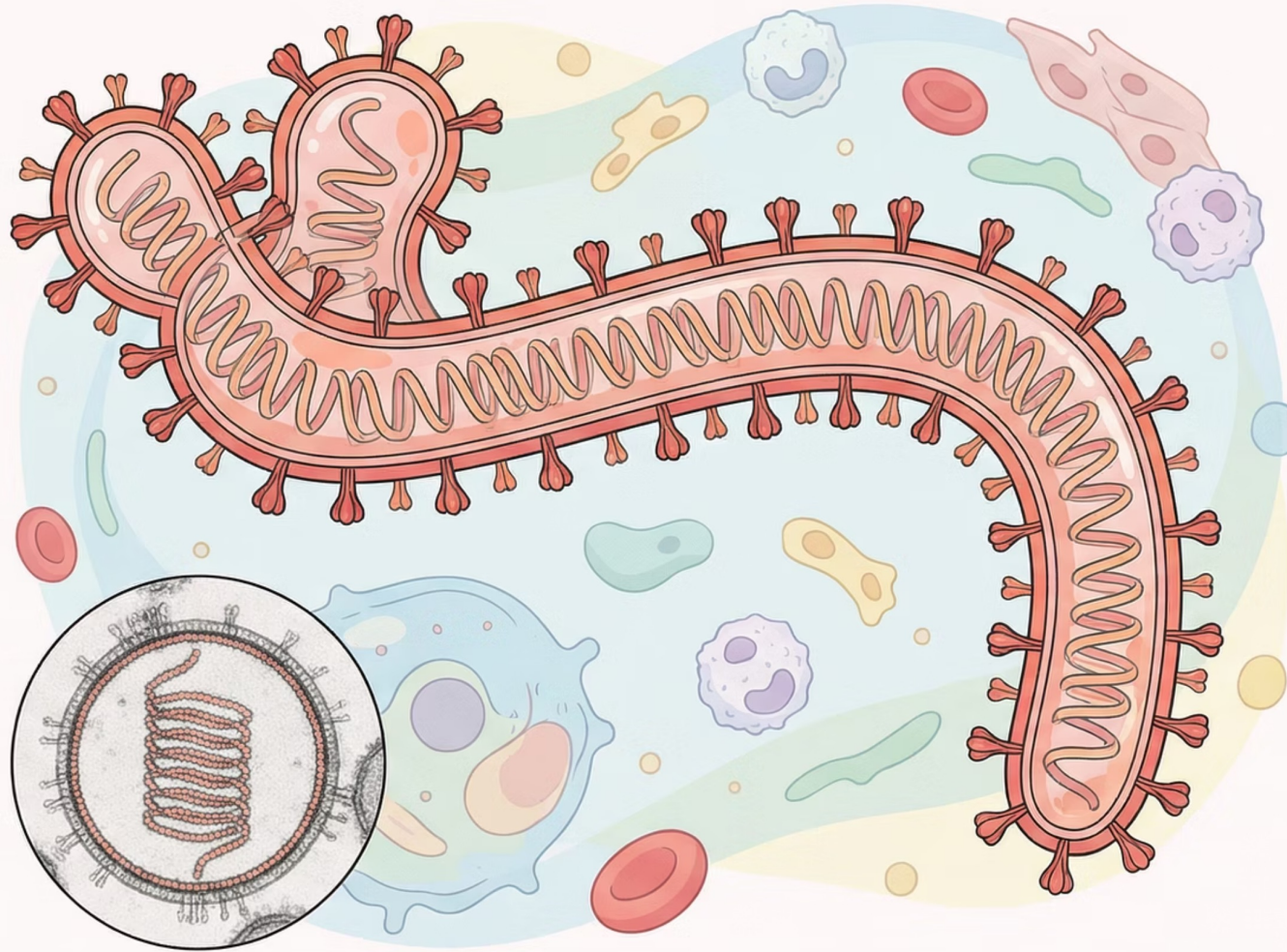
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Ebola kills up to 90% of those infected, causing severe bleeding and organ failure within days.

This virus has terrorised communities across Africa and threatens global health security.



# The Filovirus Family



Ebola virus belongs to the Filoviridae family, characterised by its distinctive filamentous structure resembling a shepherd's crook.

First discovered in 1976 near the Ebola River in Zaire, now Democratic Republic of Congo.





# Natural Reservoir and Transmission



Fruit bats serve as the primary natural reservoir, with occasional spillover to humans through direct contact with infected animals.

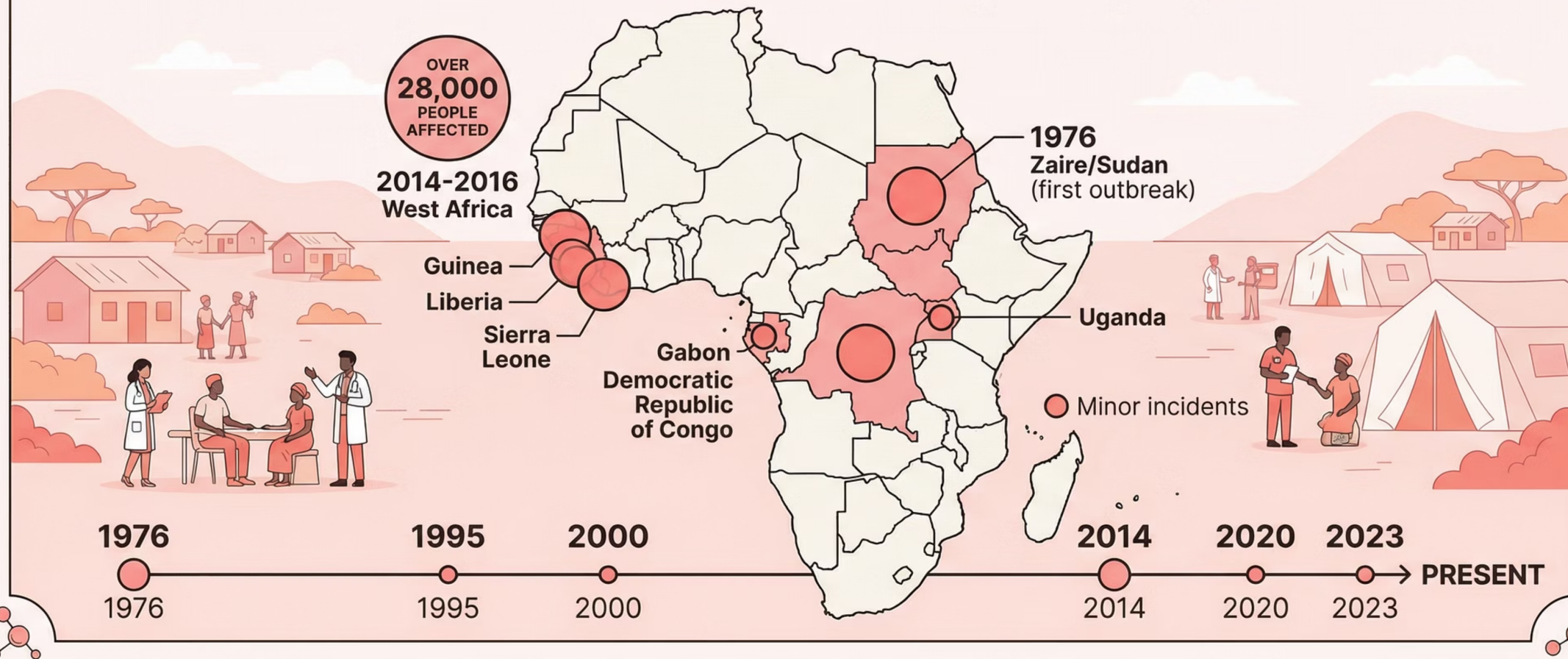


Human-to-human transmission occurs through direct contact with bodily fluids of symptomatic patients.



# Geographic Distribution and Outbreaks

Major outbreaks have occurred primarily in Central and West Africa, with the 2014-2016 West Africa epidemic affecting over 28,000 people.





# India's Vulnerability

With 1.4 billion people and extensive trade connections to Africa, India faces significant Ebola risk.

Our dense population centres could enable rapid transmission if the virus enters our borders.



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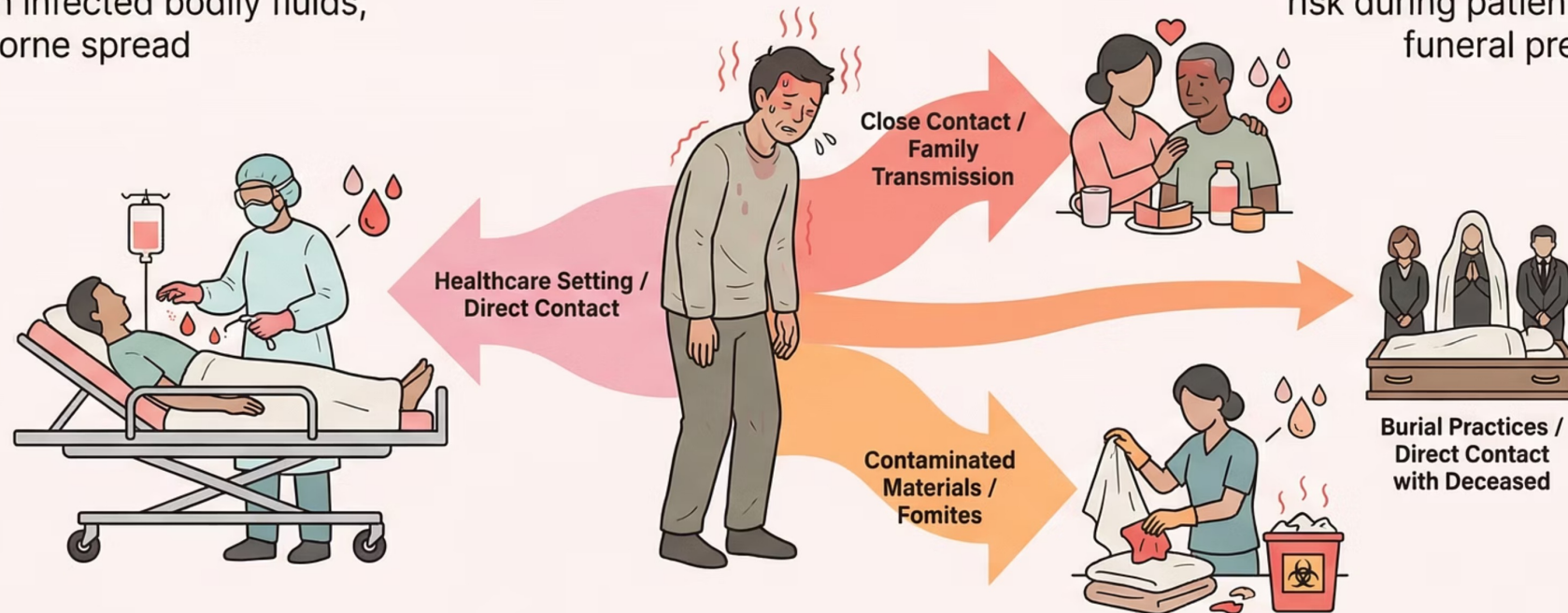
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# How Ebola Spreads

Person-to-person transmission through infected bodily fluids, no airborne spread

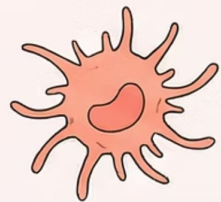
Healthcare workers at highest risk during patient care and funeral preparations



Ebola virus spreads via direct contact with blood, secretions, organs or other bodily fluids of infected people or contaminated surfaces.

# Viral Entry and Cellular Invasion

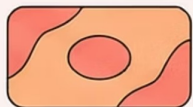
The virus enters cells through macropinocytosis, targeting dendritic cells, macrophages, and endothelial cells first.



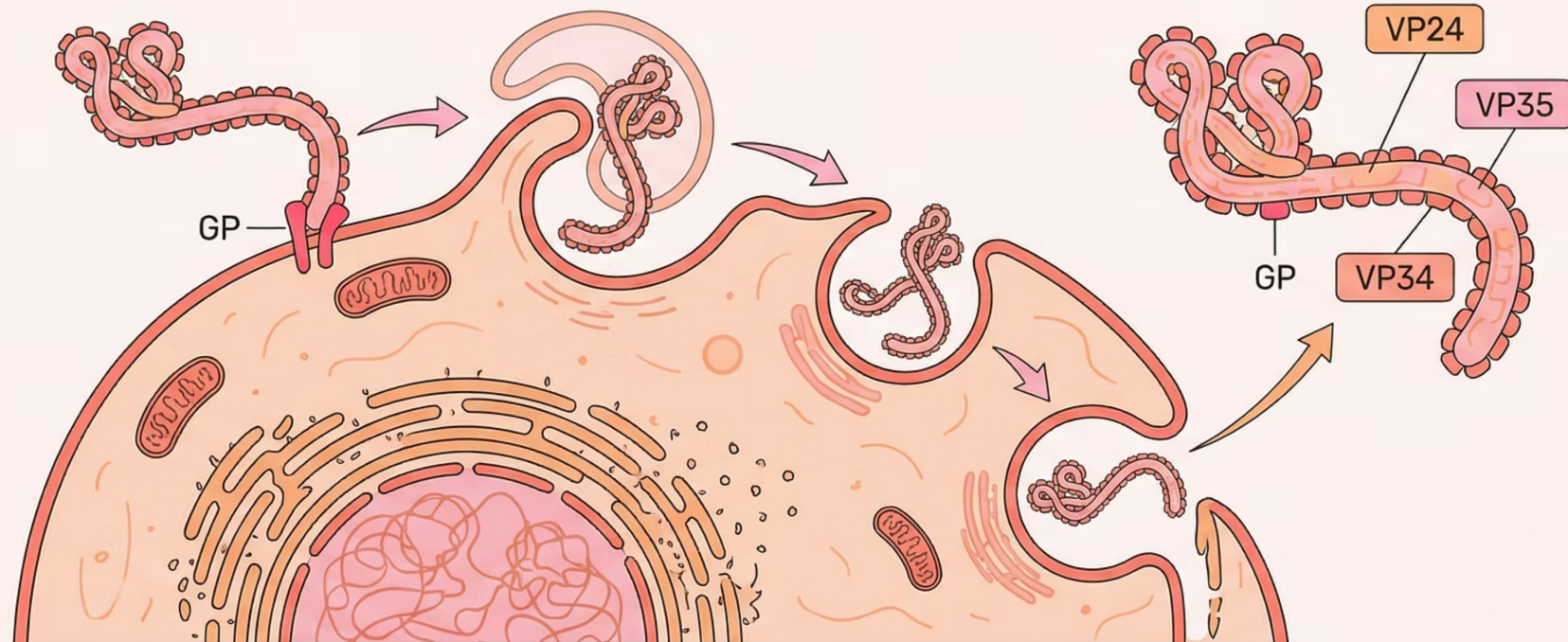
Dendritic cell



Macrophage



Endothelial cell



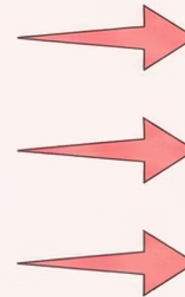
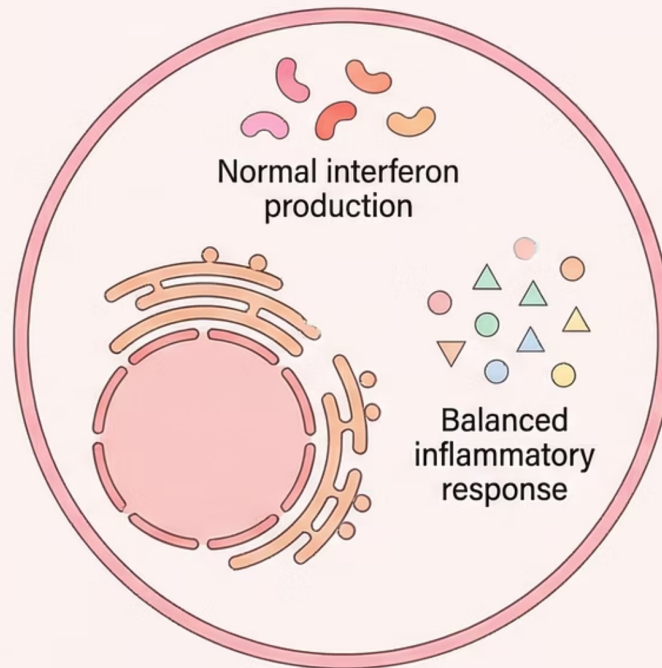
GP protein facilitates viral attachment whilst VP24 and VP35 proteins suppress host immune responses.



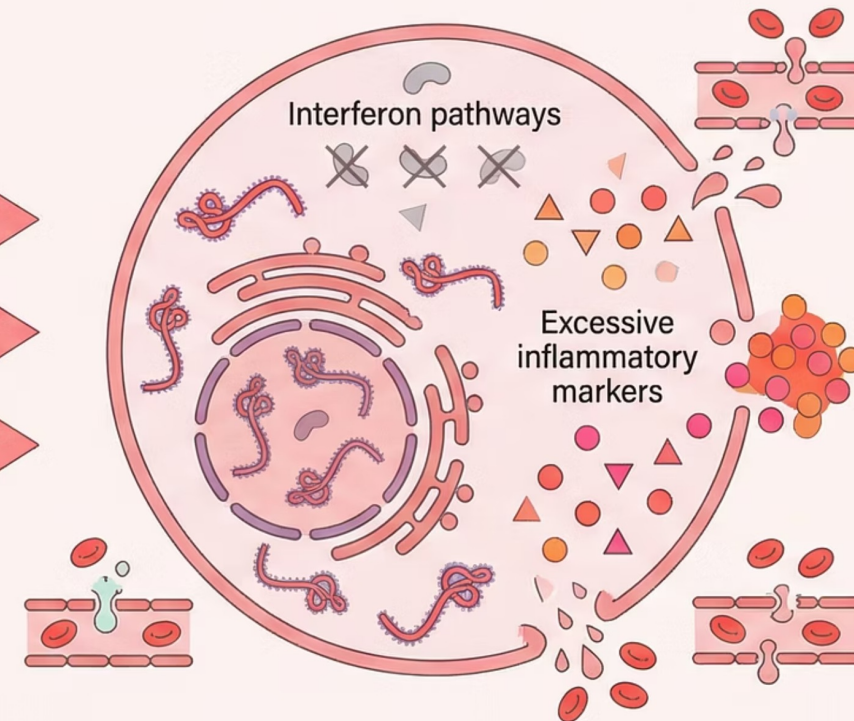


# Immune System Dysregulation

## Healthy Immune Response



## Ebola-Infected Cell



Ebola virus triggers massive inflammatory response leading to cytokine storm and vascular permeability.

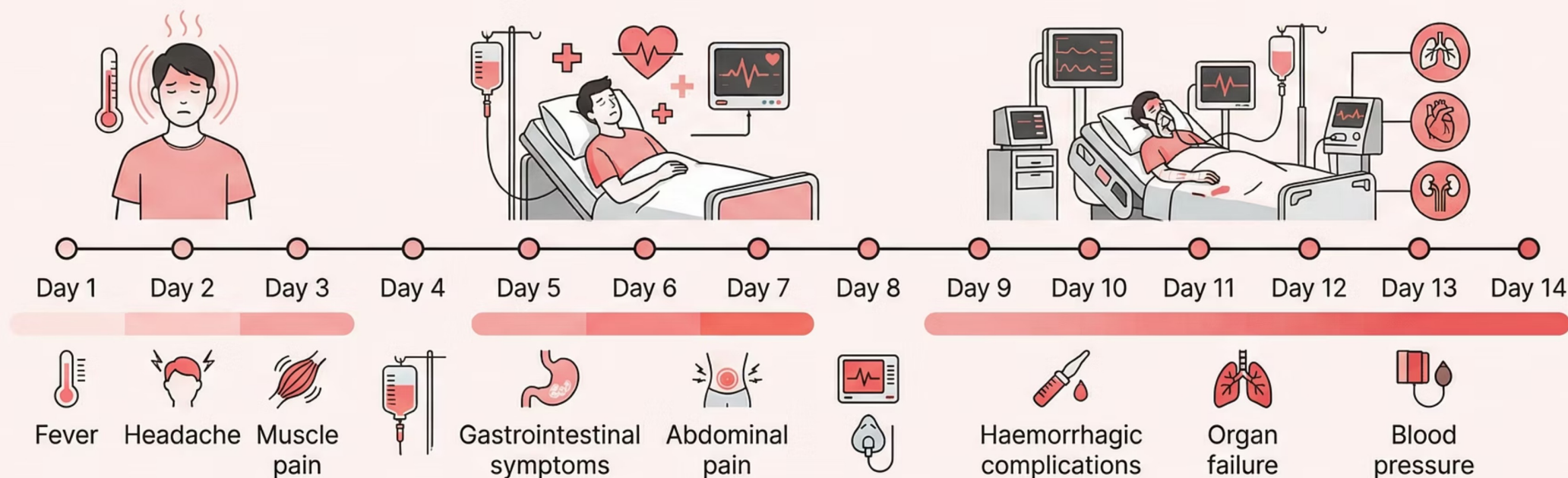
The virus impairs interferon production, allowing unchecked viral replication throughout the body.





# Clinical Manifestations Timeline

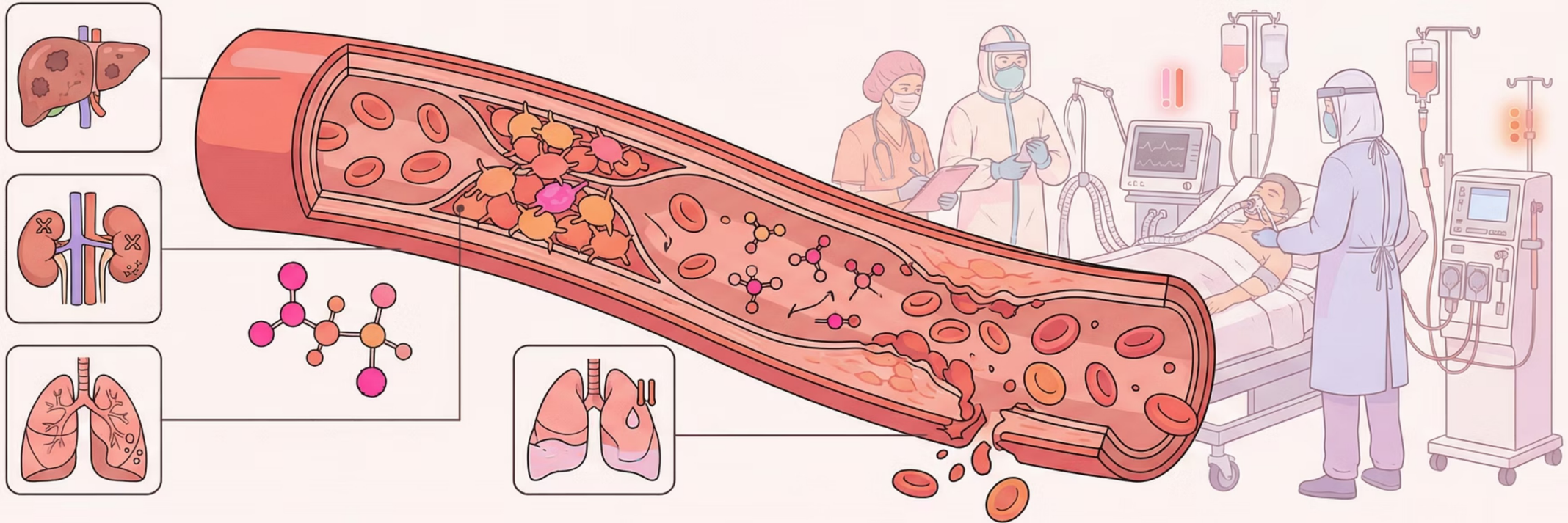
Initial symptoms include fever, headache, and muscle pain, progressing to severe bleeding and organ failure.



Case fatality rates range from 25% to 90% depending on viral strain and healthcare availability.



# Haemorrhagic Complications



Disseminated intravascular coagulation leads to both bleeding and clotting, causing multi-organ failure.

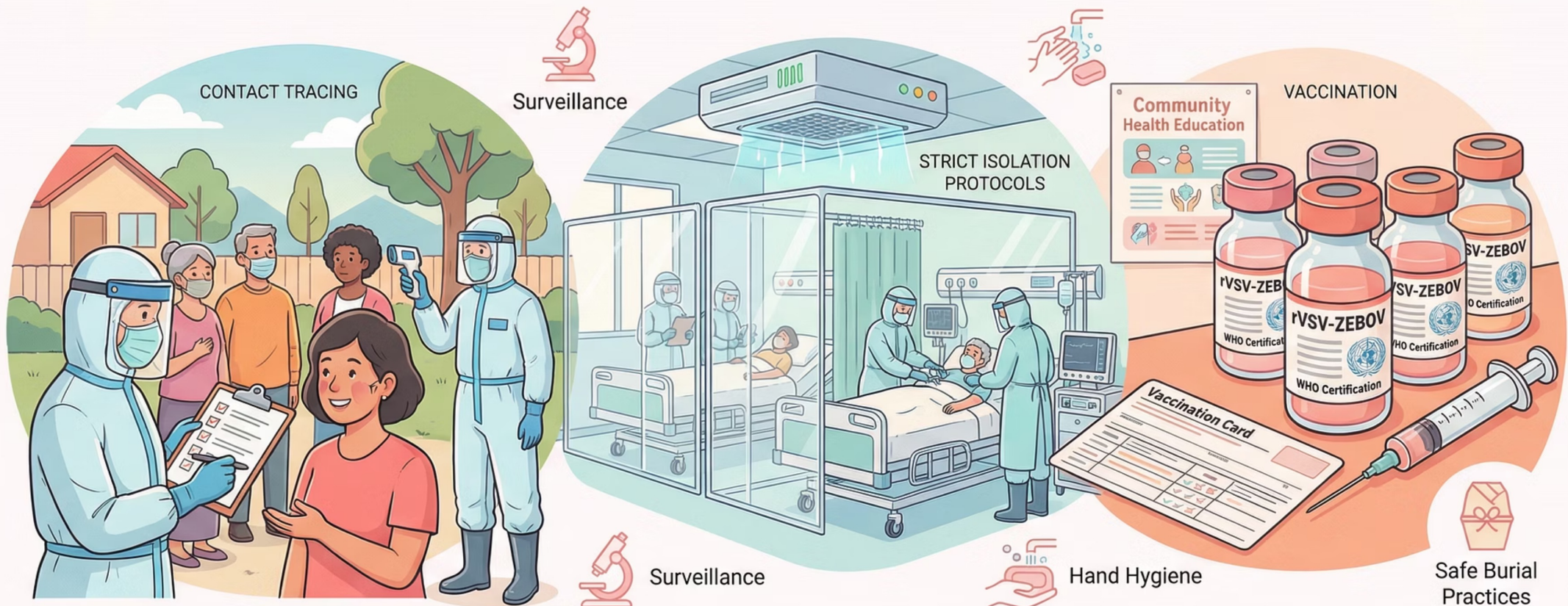






# Prevention and Control Strategies

Rapid case identification, contact tracing, and strict isolation protocols are essential for outbreak control.  
The rVSV-ZEBOV vaccine has shown 97.5% efficacy in preventing Ebola virus disease.





# India's Preparedness Framework

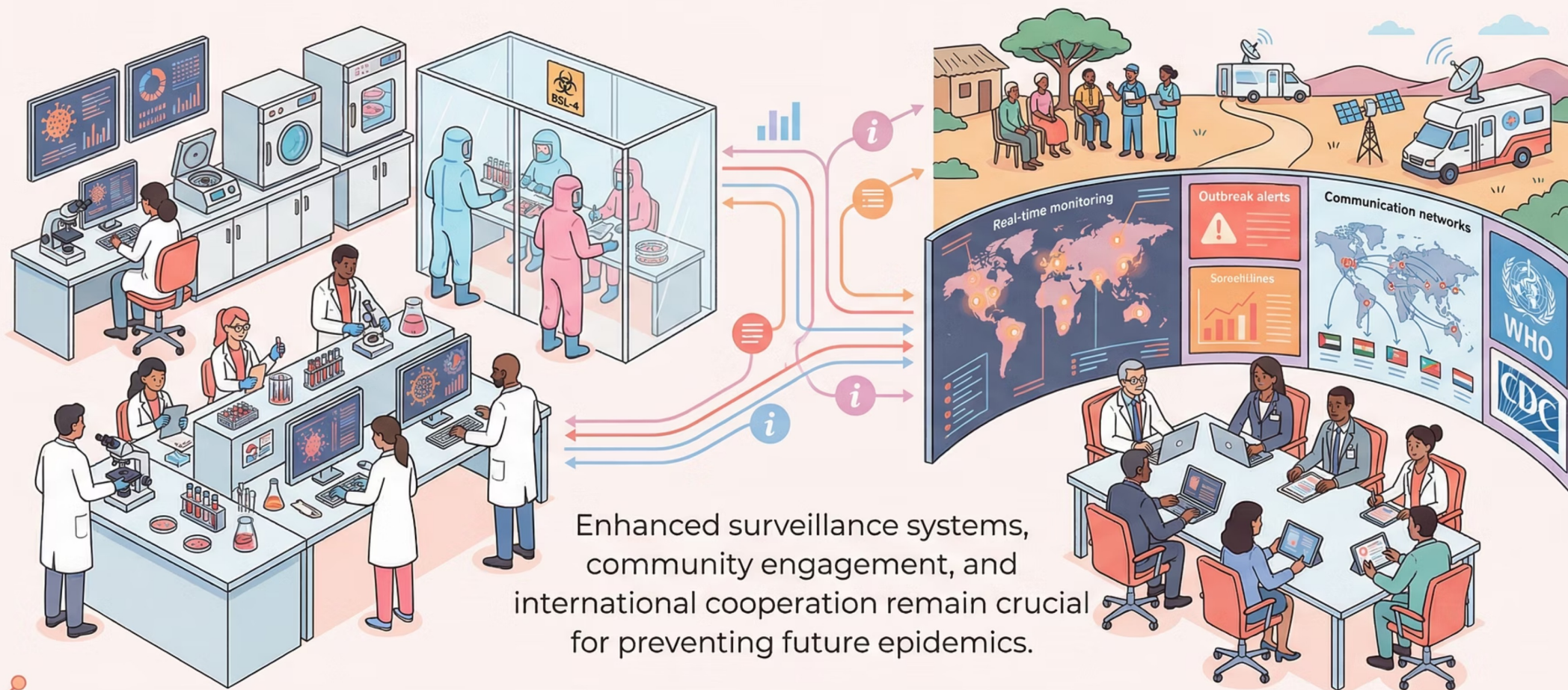
The Ministry of Health has established thermal screening at all international airports.

We have designated **isolation facilities** in major cities and trained rapid response teams.





# Future Preparedness



# Treatment Protocols in India

Early supportive care with IV fluids and electrolyte management saves lives

AIIMS and other premier hospitals equipped with specialised isolation wards





# Prevention Strategies

Hand hygiene and avoiding contact with infected individuals remain our strongest defences.



Healthcare workers must use proper protective equipment during any suspected case.

# Community Surveillance

**Village health workers** trained to identify symptoms and report suspected cases immediately



**Contact tracing systems** established to track potential exposures within 21-day incubation period.





# Global Coordination

India actively participates in WHO surveillance networks and shares epidemiological data.

Our pharmaceutical companies are developing affordable treatments for global deployment.



# Staying Vigilant

Preparation today prevents panic tomorrow. India's robust healthcare system stands ready.

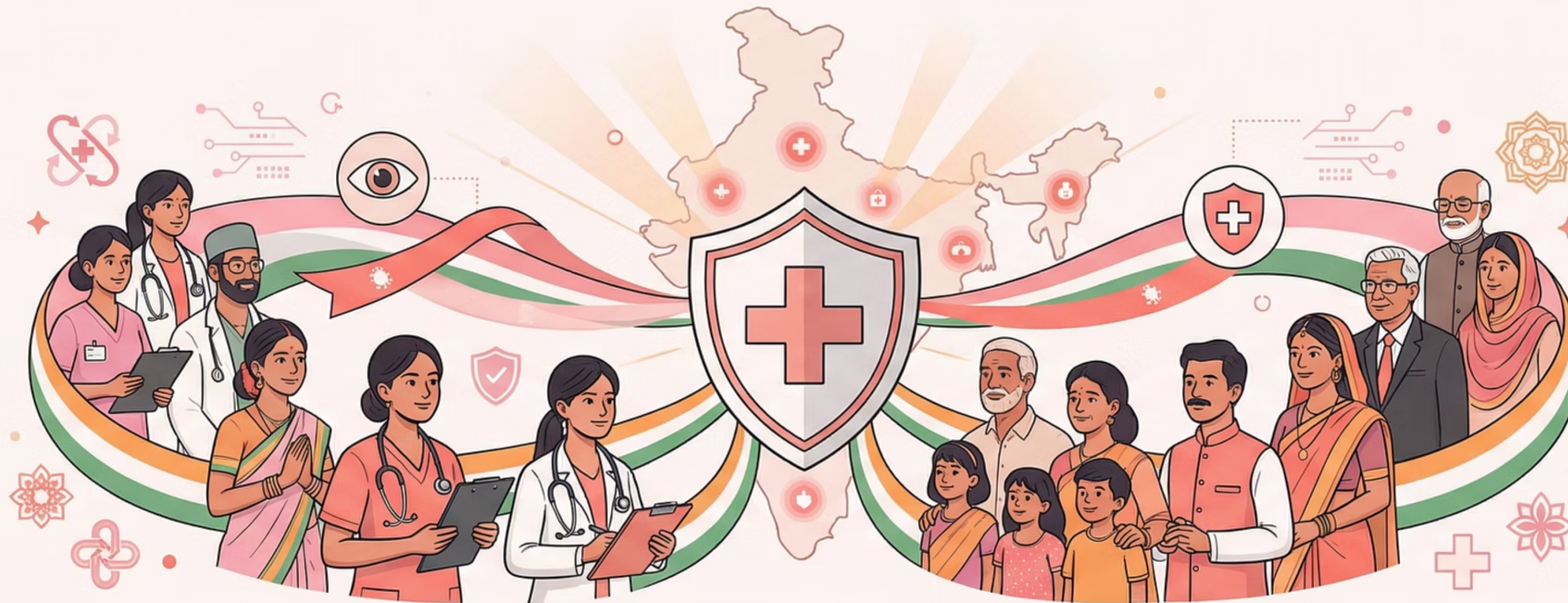
Through continued surveillance and community awareness, we can prevent Ebola outbreaks.





# Key Takeaways

- India has established comprehensive Ebola preparedness protocols.
- Early detection and isolation remain critical to outbreak prevention.
- Community awareness and global cooperation strengthen our defences.



# ASSESSMENT 1

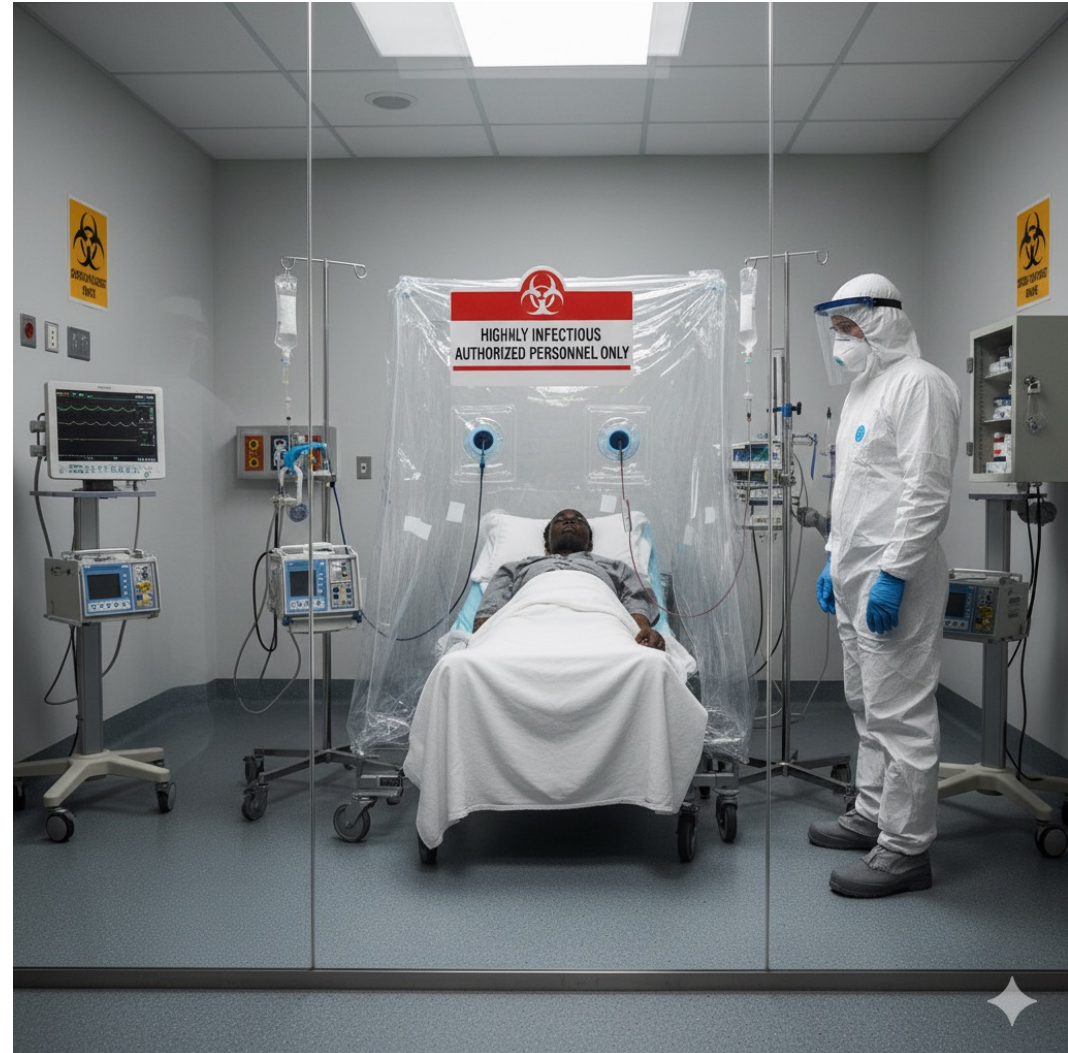


What is the **primary purpose** of the protective measures shown in the image?



# ASSESSMENT 2

Which **control strategy** is being illustrated?



# ASSESSMENT 3



Why are **safe burial practices** critical in Ebola control?



# ASSESSMENT 4

What is the **main objective** of contact tracing shown in the image?



# ASSESSMENT 5



Which **level of prevention** is demonstrated in the image?



## REFERENCES

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2. Textbook of Preventive and Social Medicine (Mahajan and Gupta), Edited by Roy Rabindra Nath, Saha Indranil, 4th Edition, 2013, ISBN: 9789350901878, JAYPEE Publications
3. Review of Preventive and Social Medicine (Including Biostatistics), Jain Vivek, 6<sup>th</sup> Edition, 2014, ISBN: 9789351522331, JAYPEE Publications
4. Essentials of Community Medicine—A Practical Approach, Hiremath Lalita D, Hiremath Dhananjaya A, 2nd Edition, 2012, ISBN: 9789350250440, JAYPEE Publications

# Thank you