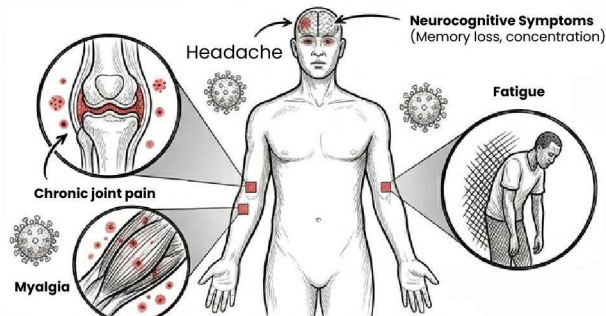
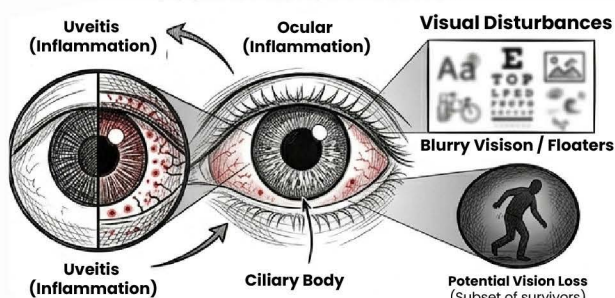




Post-Acute Sequelae



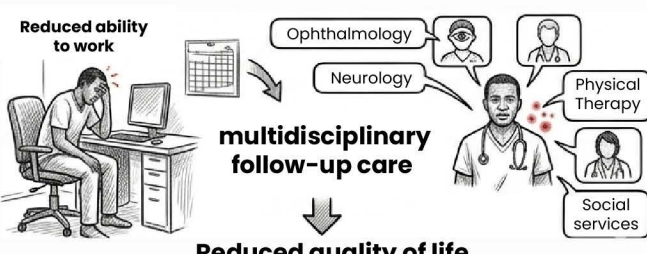
- Post-Ebola syndrome may include chronic arthralgia, myalgia, fatigue, headache, and neurocognitive symptoms.



- **Ocular involvement:** uveitis, visual disturbances, and potential vision loss in a subset of survivors.



- **Mental health sequelae:** anxiety, depression, post-traumatic stress symptoms, and social stigma.



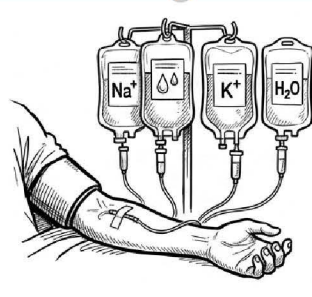
- **Functional impact:** reduced quality of life, impaired ability to work, and need for multidisciplinary follow-up care.

Therapy

- For *Zaire ebolavirus*: two monoclonal antibody therapies (single mAb and a three-mAb cocktail) are licensed and recommended.
- These mAbs significantly reduce mortality when given early and in combination with optimized supportive care.
- For *Sudan* and *Bundibugyo* viruses: no licensed species-specific therapeutics; treatment remains investigational and supportive.



- Early triage and diagnosis.



- Aggressive volume resuscitation and electrolyte management.



- Oxygenation and hemodynamic support.



- Management of coinfections (e.g., malaria, bacterial sepsis).



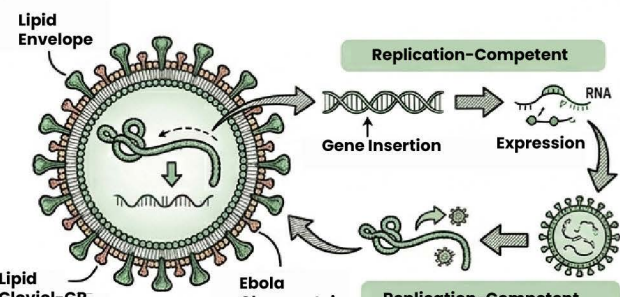
- Blood products and coagulation support when available.

General Prevention and Outbreak Control

- Rapid case identification, laboratory confirmation, and immediate isolation of suspected and confirmed cases.
- Rigorous infection prevention and control practices in healthcare settings, including:
 - Appropriate personal protective equipment and training.
 - Safe specimen handling and laboratory biosafety.
 - Environmental cleaning and waste management.
- Contact tracing and 21-day (or longer) active monitoring of contacts.
- Safe and dignified burial practices that prevent exposure to infectious corpses while respecting cultural norms.
- Community engagement and risk communication to build trust, address myths, and increase care-seeking and cooperation.
- Survivor programs to address ongoing transmission risk (e.g., sexual transmission) and long-term health needs.

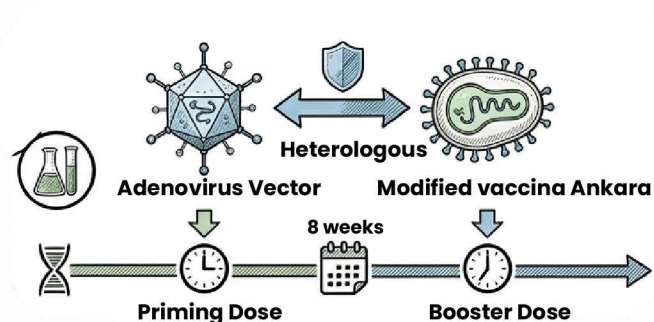


Licensed Vaccines



- **rVSVΔG-ZEBOV-GP (ERVEBO):**
 - Live, replication-competent recombinant vesicular stomatitis virus expressing Zaire Ebola glycoprotein.
 - High efficacy demonstrated in ring vaccination trials and outbreak deployments.
 - Used for frontline workers, contacts, and contacts-of-contacts in **Zaire outbreaks**.

or



- **Ad26.ZEBOV + MVA-BN-Filo prime-boost: (Zabdeno/Mvabea)**
 - Heterologous regimen with adenovirus and modified vaccinia Ankara vectors.
 - Provides **longer-term immunity** against Zaire ebolavirus in adults and older children.

Pipeline Vaccines

- **Sudan-virus vaccines:**
 - Monovalent candidates tested in phase 1 trials with acceptable safety and immunogenicity.
 - Outbreak-based efficacy trials in Uganda initiated to generate real-world effectiveness data.
- **Bivalent Ebola-Sudan vaccines:**
 - ChAdOx1-vectored constructs encoding both Ebola and Sudan glycoproteins show promising immunogenicity in adults.
- **Multivalent filovirus vaccines:**
 - Platforms aiming to combine antigens from Zaire, Sudan, Bundibugyo, and sometimes *Marburg viruses*.
 - Typically in early clinical or preclinical development; goal is broad outbreak readiness.

Key challenges: balancing breadth of coverage, immunogenicity against each component, manufacturing feasibility, and rapid deployment.

Broad-Spectrum Therapeutic Development

- Motivation: current licensed monoclonal antibodies are largely specific to Zaire ebolavirus; non-Zaire ebolaviruses remain.
- Strategies under investigation:
 - Cross-reactive and bispecific monoclonal antibodies targeting conserved glycoprotein epitopes.
 - Nanobodies and other small antibody fragments are engineered for broad orthoebolavirus coverage.
 - Small-molecule antivirals with activity against multiple filoviruses and favorable pharmacokinetics.
- Most candidates remain in preclinical or early-phase clinical stages; no pan-ebolavirus therapeutic is yet standard of care.

Virology

- Ebola is a high-impact zoonotic infection with severe clinical manifestations, high case-fatality, and substantial long-term sequelae.
- Major advances in the past decade include licensed vaccines and monoclonal antibodies for Zaire ebolavirus and significant gains in supportive care.
- Critical unmet needs: licensed vaccines and approved therapeutics for Sudan and Bundibugyo viruses, scalable survivor care, and health-system strengthening.
- Research priorities focus on:
 - Multivalent vaccines that cover multiple ebolaviruses.
 - Broad-spectrum therapeutics that retain efficacy across species.
 - Better integration of clinical care, public health, and community engagement during outbreaks.

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