Passive immunization is the transfer of pre-made antibodies to a person. Passive immunization using today’s pre-made antibodies can invoke infusion deferred in a clinical setting over a period of 30 minutes or more. An alternative approach using vectors and genes that can be turned into ‘antibody factories’ within the body is also under investigation. Both infusion and gene therapy approaches differ from immunization with vaccines that teach the body how to make its own defenses.

Antibodies

- Laboratory-made broadly neutralizing antibodies (bNAbs) against HIV can provide protection against infection in HIV-negative people.
- It might be possible to formulate these bNAbs so that a single dose could provide protection for months at a time.
- Testing bNAbs for HIV prevention can also provide proof-of-concept for developing HIV vaccine candidates. This strategy is being considered used for prevention of HIV acquisition in adults and/or breastfeeding infants.
- It is also being explored as a treatment modality and perhaps as part of a strategy to eliminate viral reservoirs.
- bNAbs are isolated from the blood of people living with HIV. A handful of individuals make these potent immune responses.
- The most potent bNAbs come from months of co-evolution with virus during chronic infection. They have unique characteristics.
- Some have atypically long regions in the CDR3 loop—a portion of the “arms” of the Y-shaped antibody protein. Others undergo a lengthy process of maturation to become potent against HIV. It will take a long time to create vaccines that elicit such responses.

Teach the immune system how to protect itself against a pathogen.

AIDS vaccines have been a key part of the prevention research agenda for nearly three decades. Existing preventive vaccines for other diseases involve one or a series of immunizations, and can provide long-term or even lifelong protection. Protection isn’t always complete and may wane over time. The one AIDS vaccine strategy to show efficacy to date (RV144) involved six immunizations and protection waned after one year. Current research is focused on improving on these results as well as exploring other vaccine candidates entirely.

There is a robust pipeline of AIDS vaccine work, some of which overlaps with the investigations of passive immunization.

In HIV-negative people, LAI ARVs could be long-acting PrEP. This could reduce the burden of adherence and make it easier for some people to take, although issues of regular testing to monitor for HIV infection need to be addressed, as they do for all PrEP strategies (right now PrEP is a daily oral strategy).

Trials of LAI ARVs start with a lead-in phase where people take oral formulations of the same drugs to establish safety and tolerability in a formulation that can be discontinued. (Injections cannot be removed from the body.)

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- The drugs used as injectables have unique properties that allow them to be formulated into doses suitable for injection. Many other common ARVs can’t be used in this way.
- The current suite of trials will provide information that could launch expanded trials in 2016/17 designed to test for efficacy and possible licensure for both treatment and prevention purposes.
- There is a robust pipeline of AIDS vaccine work, some of which overlaps with the investigations of passive immunization.
- In Southern Africa, work continues on a suite of trials designed to build on the evidence from the RV144 trial.
- A range of early-phase trials of other novel candidates to establish the safety and immunogenicity of other novel candidates are getting underway in 2015.

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