

AIDS VACCINE DEVELOPMENT

A PRESENTATION

BY

PAUL MWANGI

DOROTHY KIMANI

DAMARIS WANJIKU

KENYATTA UNIVERSITY

CONSORTIUM



- **Why do we need HIV AIDS vaccine?**
- it is the worst epidemic in the world
- ABC and behavior change have not stopped the spread
- need to reduce the epidemic to zero



- Working principle of vaccines

- human immune system

- body reacts by producing anti bodies using white blood cells these anti bodies blind /shield the pathogen.

- cellular immune system

- Where a group of white blood cells recognize and destroy already the infected cells.



DEFINITION

What is a vaccine?

A vaccine is a substance that teaches the body to recognize and defend itself against bacteria and viruses that cause disease. A vaccine causes a response from the immune system—the body's defense system—preparing it to fight, and also to remember how to fight, if exposed to a specific infection. A vaccine is not a cure, but prevents infection or slows disease progression.



- It is thus a substance introduced in the body system to **prevent** infection or **control** a disease
- Diseases are caused by pathogens .
- Vaccine thus defends a body against a particular pathogen.
- Immune system defend by producing **anti bodies** or killer cells.
- Body system have **memory cells** which reminds the system the earlier handling of the reaction of a particular pathogen this enhances **larger and quick** response.
- Vaccine can be grouped in to two
 - preventive**
 - curative**

- Preventive ones provides protection against infection thus blocks the infection
- Therapeutic on the other hand are used to treat an infection
- Vaccine types
 - live attenuated
 - whole killed
 - recombinant

Live attenuated; vaccines are made of live pathogens through chemical or physical process to weaken or to prevent a disease

e.g. measles mumps ,polio etc

Whole killed ; in this vaccine the whole pathogen is completely killed or destroyed chemically

e.g. flue ,cholera etc

Recombinant vaccines ; these are man made pieces of antigen by use of genetic engineering thus making a replica



Aids vaccine development stages

1 Pre clinical research

This is where biological concept, lab development, animal testing. before being administered to humans

2 Clinical research

in this stage the candidate vaccine is tested to human beings.

The latter takes place in three phases



safety

Phase I

- trials are the first human tests of a candidate vaccine, generally conducted on small numbers (10-30) of healthy adult volunteers who are not at risk for the disease (low risk) in question. The main goal is evaluation of **safety**, and to a lesser extent, analysis of the **immune responses** evoked by the vaccine and of different vaccine doses and immunization schedules. A Phase I trial usually takes 8-12 **months** to complete.

IMMUNOGENECITY

Phase II

- testing involves a larger number of volunteers (50-500), usually a mixture of **low-risk people** and **higher-risk** individuals from the population where Phase III vaccine efficacy trials will eventually be conducted. Phase II trials generate additional **safety** data as well as information for refining the **dosage** and **immunization** schedule. Although not set up to determine whether the vaccine actually works, Phase II trials are sometimes large enough to yield preliminary indications of efficacy. These trials generally take 18-24 months, with the increase over Phase I due primarily to the additional time required for screening and enrolling larger numbers of trial participants.

EFFICACY

Phase III

- trials are the definitive test of whether a vaccine is **effective** in preventing disease. Using **thousands** of volunteers from high-risk populations in geographic regions where HIV is circulating, the incidence of HIV in vaccinated people is compared to that in people who receive a **placebo**. Successful demonstration of **efficacy** in a Phase III trial can then lead to an application for licensure of the vaccine. Phase III trials of AIDS vaccines are generally expected to require a minimum of **three** years for enrollment, **immunizations**, and assessments of efficacy.



- **Why are vaccines important?**
 - **Are vaccines 100% effective in preventing disease?**

What is the difference between a preventive

- **and a therapeutic AIDS vaccine?**
 - **Who participates in AIDS vaccine trials?**
 - **Does every volunteer in a trial receive the vaccine candidate?**
 - **Can an AIDS vaccine cause HIV/AIDS?**



Ideal vaccine should be

- safe
- efficacious
- available
- affordable
- stable



CONCLUSION

- RADOMIZATION
- BLINDING
- PLACEBO/CONTROL

THANKYOU

FOR YOUR

ATTENTION

