

**Why isn't there a cure for Ebola yet? (Because drug development takes a lot of research, money and time)**

\$50 billion is spent in the U.S. annually on drug development.

It takes 12-15 years on average to develop a new drug.

Only about 1 in 20 drug candidates becomes approved by the Food and Drug Administration (FDA).

**Discovery and Pre-Clinical (6-7 years):**

Researchers identify a disease or condition and determine its biological basis. Thousands of different molecules are studied as chemists narrow down compounds that might work on a disease. Only about 1 to 3 compounds make the cut as potential new drugs. They then have to be purified and tested on animals before being approved for human testing.

**Clinical Trials (4-6 years):**

If the drug candidate performs well in clinical trials, then it is up to the FDA to decide whether to approve it. This is the most expensive part of the drug development process, often costing \$800-900 million. Testing involves three phases that determine if the drug is safe, if it actually works and potential side effects, using test groups of dozens to thousands of patients. Options are available to fast track drug candidates that are in urgent need to treat serious conditions such as Ebola.

**Approval and Post-Marketing (2-3 years):**

If the drug makes it through all the clinical trials, it is sent to the FDA for final approval, which can take up to 18 months. The FDA may also require post-approval studies of drug safety or side effects. After approval, the drug can go to market, and that's when the drug makes it to your medicine cabinet.

Here's where various Ebola treatments are in the development process:

**BCX4430** – This is from Biocryst Pharmaceuticals and is another antiviral. It is late in the discovery phase and has not yet been approved for trials.

**ZMapp** – This is an antibody cocktail developed by Mapp Pharmaceuticals. It is currently in the pre-clinical stage and has been tested in primates and in two humans.

**TKM-Ebola** – This is an RNAi (RNA interference) therapeutic by Tekmira. It's in Phase I of trials and has also been approved for testing on patients with Ebola.

**AVI-7537** – This drug made by Sarepta Therapeutics is also an RNA treatment. There is only enough of the drug in supply to treat 24-25 patients. It's currently in Phase I of clinical trials.

Brincidofovir – This antiviral from Chimerix is currently in Phase III of clinical trials and has been FDA- approved for testing on patients with Ebola.

Sources:

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