

## **Beat Covid Without a Vaccine**

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The Centers for Disease Control and Prevention says it'll be mid-2021 before a Covid-19 vaccine is available in quantities sufficient to “get back to our regular life.” Does that mean nine more months of lockdown? Not necessarily. There's an alternative: repeated, frequent, rapid at-home testing. At least one such test, Abbott Labs' BinaxNOW, is already being produced for the government. Others are in development.

Details vary, but each is simple enough to be self-administered. With the BinaxNow test, you swab the front of your nose, insert the swab into one side of a small card, add saline to the other side, close the card, and see if the reader on the front lights up green or red. A phone app records a negative result for use as a digital passport.

Asking those presumed to be infectious to stay home would cut transmission chains, ending Covid outbreaks within weeks. Each transmission stopped may prevent hundreds more. This isn't herd immunity, but it has the same effect. Like vaccines, the tests don't have to be perfect. It's enough to drop the virus's reproductive number (the average number of people each infected person infects) below 1.

Cornell University's quick defeat of its Covid cluster shows the power of frequent testing. Cornell tests all undergraduates twice a week and quarantines those who are positive. After an unauthorized party, Cornell had 60 positive cases a week before starting surveillance testing. It now has about three a week.

Frequent at-home rapid testing could help keep outbreaks at bay and restore the economy. Health departments would ensure that hot-zone populations get priority access. Digital passports would be required, like masks, to go to work, attend school, make reservations, enter stores, etc. Private-sector requirements would strongly encourage collective compliance.

Current rapid tests, including Abbott's, generate 2% false positives, too high for at-home use. Each pack of tests must come with a confirmatory test that detects a different part of the virus. Both would need to turn red to deem a person positive. This plus repeat use 24 hours later could drive the false-positive rate well below 0.1%. Rapid tests are most accurate on subjects who have high viral loads and are contagious, making them ideal for public-health use.

Our models show outbreaks can be driven down in weeks even if only half a community uses rapid tests every four days. Fifteen million tests a day could stop outbreaks across the U.S. Based on data from symptomatic Covid patients, the Food and Drug Administration has approved BinaxNOW for use in a doctor's office or clinic. This will help, but such "point of care" tests are too cumbersome to use on the scale needed to reopen the economy.

Rapid tests need to be tested with asymptomatic infected patients. If they work as well, particularly on those with high viral load, the FDA will be closer to approving them for home use. The agency is highly focused on bringing safe and effective Covid testing into the home.

Ford Motor Co. produced an average of one B-24 bomber every 63 minutes in World War II. We can print tens of millions of paper-strip tests a day—enough to end Covid world-wide. The administration should organize a Manhattan Project, run by the Defense Department, to produce and provide free at-home rapid tests to all Americans, starting in hot spots.

Transmission is likely to increase this fall. Pending the rollout of rapid home tests, the country should hunker down and cancel potential superspreader events—including in-person classes in public schools, colleges and universities—when outbreaks arise. Covid-19 is ravaging the land, but there's a clear way to fight back quickly and safely.