

The secret of Connecticut's success in battling COVID-19

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On June 30, 21,416 COVID-19 tests were performed in the state of Connecticut. Only 152 came back positive. This represented a remarkable turnaround for a state that regularly saw more than 1,000 new cases a day in April. We asked Prof. Edward Kaplan, an operations and modeling expert who has extensively studied the spread of the disease in the state, what Connecticut has gotten right—and what risks

still remain.

What has Connecticut done right in the fight against COVID-19, and what can other states learn from that?

Connecticut acted quickly to add COVID-19-specific hospital capacity early in the outbreak before stay-at-home restrictions were implemented. For example, the Yale-New Haven Hospital relocated [cancer patients](#) from the top floors of the Smilow Cancer Hospital to create a dedicated negative-pressure COVID-19 ICU well in advance of the wave of cases. Those beds filled, but COVID-19 patients were not blocked from receiving critical care, enabling the hospital to avoid the excess mortality that was seen in places like Italy (and New York City) on account of insufficient ICU capacity. Unfortunately, even with such preparations, Connecticut failed to protect its most vulnerable citizens from infection, and the number of deaths per capita from COVID-19 in Connecticut remains the third highest in the nation at 1.2 per thousand residents. Nonetheless, things could have been much, much worse.

The timeliness of the social distancing and stay-at-home orders was also critical—these were in place early enough to slow what was in early March a rapidly accelerating epidemic.

Finally, the state has been very patient in re-opening, waiting for available metrics such as new hospitalizations and deaths to decline to sufficiently safe levels before allowing businesses to re-open. Indeed, while Connecticut was among the first states to shut down, it was also among the last to re-open. Community transmission is still occurring in Connecticut, but at very low levels compared to just a few months ago.

What risks are we still facing in Connecticut?

The risk now is simple: as of May, CDC's seroprevalence survey

suggested that less than 5% of Connecticut residents were infected during the outbreak this spring. Another such seroprevalence study is underway, but it will likely show that more than 90% of the population remains susceptible to infection. This means that as restrictions are lifted, there will inevitably be a re-mixing of susceptible and unknowingly infectious individuals in the population, which will reignite transmission if residents fail to (or only loosely) adhere to social distancing and infection control protocols, including wearing masks whenever out in public. People are tired of feeling locked up and want to return to enjoying life, going out to restaurants, bars, clubs, concerts, etc., while of course businesses want to re-open and workers need to return to earning income.

Most young people do not experience severe symptoms if infected, which can lead to lax behavior that in turn leads to unknowing, asymptomatic transmission in chains that eventually reach someone vulnerable—an elderly person or someone with underlying health conditions. Asymptomatic transmission chains must be interrupted, while vulnerable populations must be better protected. The key tool for achieving this is aggressive and repeat, targeted testing of the population, with the goal of isolating those found infected. Nursing home staff should be at the very top of the list of those repeatedly screened. Unfortunately, the state has not been able to achieve the required level of testing and isolation to control a rebound in infections. The best epidemiological modeling projections for Connecticut suggest that such an uptick in infections will occur towards the end of the summer.

If rates continue to rise in other states, how can Connecticut keep the virus under control?

Connecticut, along with New York and New Jersey, is mandating two-week quarantines for travelers coming from high-risk states, but how effectively such quarantines can be enforced is questionable. Indeed,

with many residential colleges planning to return students to campuses across the state, it is almost certain that infections will continue to be imported in the fall. What the state can do now is prepare a testing and isolation strategy to quickly identify and contain outbreaks as they happen while continuing to promote social distancing and infection control. Education is also key: people need to understand clearly that the precautions taken are for the protection of others, not only themselves. With no treatments or vaccines yet available, minimizing the time from [infection](#) to isolation remains the key. Smart use of targeted testing to identify and isolate those infectious from susceptibles remains the best way to manage such outbreaks. Unfortunately we are not there yet.

One additional area where Connecticut can lead the way—it has been demonstrated recently that it is possible to track the concentration of [coronavirus](#) RNA in sewage sludge. A team from Yale has been sampling sludge daily from New Haven's [wastewater treatment plant](#), and over time the results revealed the complete trace of the epidemic, with the virus RNA concentrations rising and falling exactly as one would expect in an outbreak. This system can be deployed at wastewater treatment plants across the state, enabling an earlier signal of transmission that would be observable from hospitalizations or COVID-19 cases alone. In the absence of repeat testing in the population, such wastewater epidemiology could prove especially valuable in signaling the start of a new outbreak.

Provided by Yale University

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