What Other Countries Can Learn From Italy During the COVID-19 Pandemic

In the coronavirus disease 2019 (COVID-19) pandemic, Italy has been hit very hard, with 110,574 documented cases and 13,155 documented deaths related to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection as of April 1, 2020. The number of cases and deaths cannot be explained simply because of the epidemic starting in Italy earlier compared with other countries besides China. It is important to understand why death rates were so high in Italy to learn how to best prepare and how to plan for optimal actions in other countries. Some contributing factors may be immutable (eg, age structure of the population), but even these need to be laid out carefully in preparedness assessments. Some other contributing factors are potentially modifiable.

Some factors pertain to demographics and background disease in the population. Italy has the most elderly population in Europe and the second most elderly population in the world after Japan. COVID-19 has a strong age dependence for the severity of the infection and the risk of death. The median age of people infected with SARS-CoV-2 who are dying in Italy has been 80 years, and the average age of patients requiring critical care support has been 67 years. Moreover, COVID-19 morbidity and mortality is strongly dependent on the presence of concomitant serious diseases, and Italy has a high proportion of patients with history of smoking and high rates of chronic obstructive pulmonary disease and ischemic heart disease. The corollary is that preparedness for needs of intensive care unit (ICU) beds and estimates of expected deaths should consider the age structure and chronic diseases of the population served by each health care system. Taking this adjustment into account, burden of disease may be expected to be much less in most areas in the United States, with variability across states and hospital catchment areas. For example, the proportion of the population older than 65 years is 9.5% in Alaska as compared with 19.1% in Florida and 23.1% in Italy.

A second set of factors in Italy is the increased burden of cases that presented themselves to the health care system. The proportion of people infected must have been very high in specific areas that were highly affected. In the town of Vò, all 3300 residents were tested and 23.1% in Italy.

During the COVID-19 Pandemic

© 2020 American Medical Association. All rights reserved.
case of exposures of medical personnel to avoid loss of personnel capacity.

Stochastic factors should also be considered. Not all of Italy, but a few cities among hundreds of cities and towns have carried most of the burden of the epidemic and have seen their hospitals crash. The Lombardy, Emilia-Romagna, and Veneto regions carry the highest numbers of infected individuals and account for 46%, 13%, and 9% of all Italian cases, respectively. The most affected provinces are Bergamo, Brescia, Milan, and Cremona, which together account for 33% of all Italian cases. There is heavy seasonality of deaths (even more so in countries with high proportions of the elderly and people who smoke, like Italy), with 25% more deaths in winter as compared with summer. Many of the excessive deaths are related to respiratory infections and are an annual occurrence. Although the infections are typically related to influenza, in 2020, SARS-CoV-2 is also a key contributor. In fact, in the 3 months prior to the outbreak, there were fewer deaths than is typical for the winter months in North Italian cities, thus leaving a larger pool of susceptible, elderly individuals. The seasonal peak of deaths varies across hospitals, and it may be difficult to predict which hospital will have the maximal burden. The corollary is that some reserves of resources, such as ventilators, should be in a stand-by allocation with the ability to assign them rapidly to hospitals that saturate their capacity.

In the absence of prevalence and incidence data, including the results of serology testing, it is difficult to predict the effects of specific major public health decisions, such as lockdowns, on the course of the COVID-19 pandemic. For example, it is not known whether implementing a lockdown at a time when many people can infect others could lead people to spend more time in close quarters with the elderly and those who are susceptible. Similarly, it is not known whether a new epidemic wave may emerge when lockdown measures are removed. There are also unanswered questions about whether the stress and panic of a public crisis leading to major disruption and lockdown may have increased the susceptibility of elderly and frail individuals to a respiratory virus. Countries with aggressive early contact tracing and extensive laboratory testing (eg, Taiwan and South Korea) seem to offer examples of successful containment. By comparison, in Italy both contact tracing and laboratory testing were more limited, and lockdown had to be used as a last, blind measure of desperation. It is important to study the effects of the policies that are adopted first on the expected wave of patients with severe illness who will need hospitalization.

Finally, a major question that should be answered is the causal contribution of SARS-CoV-2 infection to related deaths. It is difficult to differentiate between deaths with SARS-CoV-2 infection and deaths caused by SARS-CoV-2 infection because the vast majority of patients who have died had 1 or more other major pathologies (98.8% with at least 1 comorbidity, and 48.6% having 3 or more diseases) that contributed to their death. Also, the lost quality-adjusted life-years of patients who died and any long-term consequences for patients who survive should be formally studied. Through this research, the relative burden of disease from COVID-19 can be better understood, and resources in overburdened healthcare systems during periods of crises can be better allocated.

REFERENCES

ARTICLE INFORMATION
Published Online: April 7, 2020. doi:10.1001/jamainternmed.2020.1447
Conflict of Interest Disclosures: None reported.