Preparing for What Comes Next: Where Will COVID-19 Patients Recover?

*An Analysis of 23K Nursing Home Residents in New York and
COVID-19 Survey Results from 8,942 Nursing Homes across the United States*

Summary

Over 34,000 patients have been hospitalized for COVID-19 in New York City alone. As hospitalizations begin to flatten, the question facing New York will be: what comes next? One pressing and immediate issue to solve is where will COVID-19 patients who survive their hospitalization recover. Hospitalized COVID-19 patients often have underlying conditions and have severe COVID-19 disease requiring ICU stays and ventilators. After being in the hospital, COVID-19 patients will be de-conditioned and in need of rehabilitative care coming out of hospitals. Experts estimate that up to 30% of COVID-19 patients will need transitional care in facilities such as nursing homes.

Much of the attention to date has been on outbreaks among nursing homes where the elderly and disabled reside. Nursing homes serve a dual function in America; in addition to being long-term care facilities where the elderly and disabled reside, they are also "short-term" care settings where hospitals send their patients to recover after a severe illness. They are an essential part of the continuum of care, necessary to keep the entire system flowing. CarePort surveyed 8,942 nursing homes, which represent over 50% of nursing homes in the US, to better understand the impact of COVID-19 on the short-term rehabilitative component. Based on anecdotal reports, hospitals are facing challenges transitioning COVID-19 patients out of the hospital because understandably, nursing homes are reluctant to take in new patients. The nearly 9,000 nursing homes we surveyed over the last three weeks utilize CarePort to receive patient referrals from hospitals. Hospitals use CarePort to find short-term rehabilitative beds at nursing homes where patients can recover.

Our survey results show that fewer than 10% of nursing homes reported the ability to care for incoming COVID-19 patients. When hospitalized COVID-19 patients cannot leave the hospital because there is no place for them to recover, hospital capacity will be further exacerbated. In this report, we conduct a deep dive into New York to quantify the magnitude of this bottleneck. In New York City alone, there could potentially be a shortage of over 1,000 beds. In our next report, we plan on releasing the capacity of nursing homes across the country so that hospitals and public health officials can work together to prepare for

what comes next: the COVID-19 nursing home bottleneck.

As part of a deep dive into New York, this report conducts an analysis of real-time data on 23,611 nursing home residents in New York, representing 20% of nursing homes in New York State. Much has been reported on the devastating effects of COVID-19 on nursing homes, where over 1.3 million Americans reside. Unfortunately, it has been difficult to track COVID-19 in nursing homes given the lack of standardized reporting and challenges around testing. We hope our New York analysis serves as a model for how public health officials can track COVID-19 in nursing homes in real-time until testing is widely available.

Data Source

CarePort Health is a transitions of care platform used by 1,000 hospitals and 180,000 post-acute providers, including nursing homes, home health agencies, hospices, long-term acute rehabilitation hospitals, acute inpatient rehabilitation hospitals, dialysis facilities and many more post-discharge settings of care. Real-time patient data from Allscripts, Epic, Cerner and Meditech, as well as many skilled nursing and home health EHRs, feed into the CarePort platform. CarePort has a broad, national view of COVID-19 patients across disparate EHRs and hospitals of all sizes, distributed across urban, suburban and rural locations in 43 states.

CarePort manages thousands of COVID-19 hospitalizations every day and tracks patients through their acute and post-acute course of care. Given CarePort's national footprint and visibility from the minute the patient presents at the emergency department through their care journey post-discharge, CarePort likely has one of the only cross-continuum views of COVID-19 patients that span care settings.

CarePort receives patient data from all hospital settings, including emergency rooms, inpatient units and ICUs. Because CarePort tracks patients as they move through each of those settings, CarePort has a view into COVID-19 length of stay and outcomes – such as whether the patient required a ventilator, what procedures were performed and whether the patient survived. Our data includes symptoms that patients present with, as well as laboratory tests, so we can distinguish between suspected, exposed and confirmed COVID-19 patients. This is important given the lack of testing and lag in testing in many areas. With this data, we can track a wider and likely more representative swath of COVID-19 patients – not just patients who were tested – and earlier in their care course. CarePort also captures patient demographic data (e.g. age, gender, ethnicity, insurance) as well as underlying conditions and comorbidities, so we can identify trends in who is being hospitalized and what patient characteristics correlate with outcomes.

Importantly, CarePort's acute data is linked to post-acute data. Therefore, CarePort is able to present a holistic view of the COVID-19 patient. CarePort can report on cross-continuum outcomes that encompass both the hospital and post-hospital experience.

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Given the breadth of the CarePort data source, we believe our observations can augment and complement the depth of data that each hospital or nursing home has in its own EHR. The insights presented below are preliminary and will likely evolve as CarePort sees thousands of new COVID-19 patients weekly. CarePort is releasing these early observations given the rapidly evolving nature of the pandemic, and the need for hospitals and post-acute providers to have more data to help inform their COVID-19 response.

Part I: COVID-19 Survey Results from 8,942 Nursing Homes across the United States

Many COVID-19 patients will need to recover in nursing homes, yet few nursing homes are accepting COVID-19 patients, which could create bottlenecks on the backend for hospitals

Experts project that up to 30% of hospitalized COVID-19 patients will require short-term rehabilitative care in a nursing home (JAMA). Hospitals, in accordance with CMS regulations, are unable to discharge patients until a nursing home where the patient can convalesce is found.

CarePort surveyed nursing homes across the US to identify nursing homes able to care for recovering COVID-19 patients. CarePort surveyed 8,942 facilities over the last three weeks and across 46 states. CarePort embedded this survey into its product, which is widely used by hospitals across the US to transition patients to nursing home and other recovery settings. CarePort estimates that on average, 40% of patients across the US that transition to one of these post-discharge settings are facilitated via CarePort.

CarePort conducted this survey to assist its hospital clients find nursing homes that were willing and able to accept COVID-19 patients, and to ensure that COVID-19 patients could be safely transitioned to their next setting of care. This information is now included in a tool that hospitals can use to search for nursing homes. Having this information readily available can help reduce bottlenecks on the backend of a hospital stay.

Responses	US Nursing Homes	New York Nursing Homes
Willing/Equipped to Accept COVID–19 Positive Patients	891	212
Not Able to Accept COVID–19 Patients	3,451	49
Not Specified	654	28
Unable to Answer	3,946	223
Total	8,942	512

Only 10% of nursing homes nationally could affirm their ability to accept COVID-19 patients. 40% are not able to accept, and another 50% could not or would not specify.

Preparing for what comes next: Modeling nursing home bed needs for recovering COVID-19 patients shows that New York could potentially be short 1,000+ beds

In our survey of nursing homes in New York, 212 (41%) responded that they were able to accept COVID-19 patients, though 49% could not or would not specify. Notably, our survey was conducted after New York issued rules that require nursing homes take COVID-19 patients discharged from hospitals. However, although this requirement exists, there may be differences among nursing homes in their ability to care for COVID-19 patients. Nursing homes often lack critical supplies such as PPE, isolation rooms and other specialized equipment needed to care for COVID-19 patients.

As of April 17, New York City has had 34K hospitalized cases for COVID-19. Below is a model for calculating nursing home bed needs for recovering COVID-19 patients:

Here are the critical inputs:
- Among hospitalized patients who survive (27,696 patients), 21% (5,816 patients) may need recovery beds in nursing homes in the coming weeks.
- As of March 15, CMS reported that there were 304 facilities within 25 miles of New York City with approximately 4,458 available certified SNF beds.
- Based on our survey results, 41% of nursing homes in New York City may be able to accept recovering COVID-19 patients, so 1,828 beds would potentially be available.
- Not all beds will be able to be converted to COVID-19 convalescent beds, as nursing homes are a mix of long-term residential and short-term rehabilitative beds. Assuming 80% could be converted, only 2,604 beds may truly be available for COVID-19 patients coming out of hospitals at any given time.
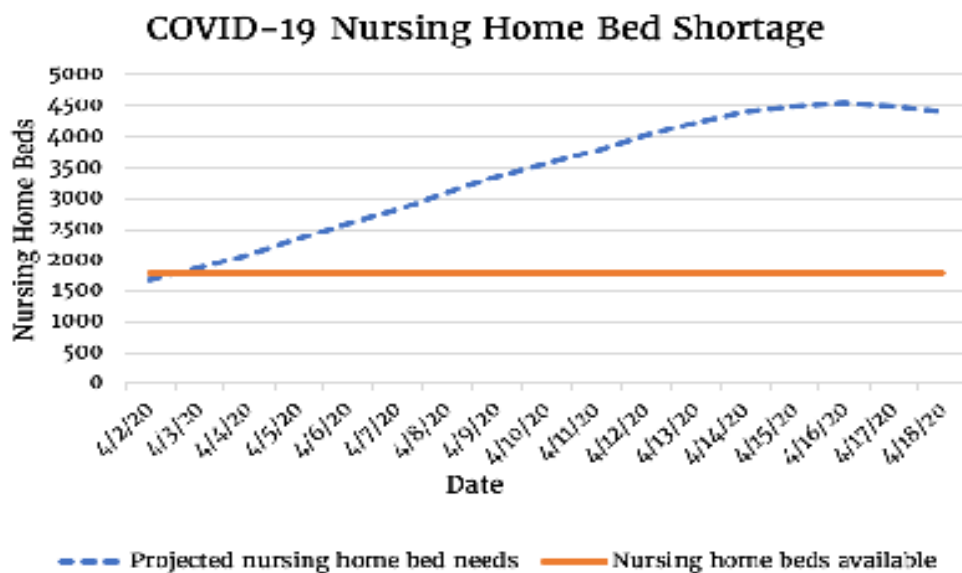
The Details

- In our analysis, we assumed only 21% of COVID-19 patients discharged from a hospital will require a SNF bed, because the 30% estimate was based off Medicare patients – a population that has traditionally required more rehabilitative care than younger patient populations. The 21% figure is based off of CarePort data, which shows that 40% of hospitalizations are for patients over 60. Within that population, we assume that 30% of patients will need nursing home care. The remaining 60% of hospitalizations are patients under 60 years old, and in that population, we estimate that only 7% will require nursing home care. We use the 7% estimate as that is the percentage of hospitalized COVID-19 patients currently being discharged to nursing homes in New York, based on CarePort data. (Of note, this percentage is unlikely to represent true demand for rehabilitative care and is more indicative of supply issues). The combination of the two gives a blended number of 21%.
- We recognize that this may be a conservative underestimate, as anecdotally we are hearing from our hospital partners that many patients under 65-year-old are requiring rehabilitative care. The hospitalized population is hospitalized because of severe COVID-19 disease – no matter the age group.
- It is unlikely that 100% of the remaining capacity in nursing homes within a 25-mile radius of New York could be utilized for COVID-19 patients, so that is another area where this model may underestimate the shortfall.
- The supply of nursing home beds may be increased because of the beds that are being vacated due to COVID-19 deaths. Some of these residential beds may also be converted to rehabilitative beds for recovering COVID-19 patients.
- Of note, there could also be patient preference issues at play, which would alter demand for nursing homes. For example, because visitors are no longer allowed at nursing homes, patients may prefer to recuperate at home. However, unless the appropriate clinical and social support is arranged to be provided at home, these patients may be at high risk of hospital readmission. In the coming weeks, CarePort will investigate whether there is a spike in readmission for COVID-19 patients who are discharged home.

Trouble on the horizon? Of 4,996 nursing facilities who responded nationally, only 10% affirmed their ability to accept COVID-19 patients coming from hospitals

Of the nearly 9,000 nursing homes surveyed, only 891 facilities indicated that they were able to care for new COVID-19 patients, which represents only 10% of facilities. Of note, the response rate varies state by state, and in areas where there are lower response rates, the respondents may not be a representative sample.

As COVID-19 surges occur throughout the US, it is critical to keep an eye on nursing home ca-pacity. Nursing homes are an important part of the care continuum, and they are necessary to ensure that COVID-19

patients have the clinical support needed for their recovery. If these care settings are unavailable, alternative care options will need to be identified to ensure a successful rehabilitation. Furthermore, without places for patients to recover, hospital capacity issues may be exacerbated at the worst possible moment.

By tracking post-acute capacity in relation to the surge in hospitalized patients, state and fed-eral governments have a unique opportunity to get ahead of the virus. Hospitals on the ground need tools to help them determine which nursing homes can accept COVID-19 patients to en-sure safe and effective patient transitions. At the state and federal government level, surge nursing homes may need to be constructed or converted to house COVID-19 patients in recov-ery to prevent bottlenecks from occurring at any point in the healthcare system.

Part II: An Analysis of 23,000 Nursing Home Residents in New York on April 16, 2020

Nursing homes are transitional care settings for recovering patients coming out of hospitals, and they are also residential facilities for the elderly and disabled, who are especially vulnerable to severe COVID-19 disease given their age demographic and underlying conditions. Both aspects therefore must be considered when examining the impact of COVID-19 on nursing homes. In this second part, we analyze symptoms of COVID-19 and the COVID-19 infection rate among 23,000 nursing home residents.

What is the real COVID-19 infection rate in nursing homes? Our data suggests 93% of nursing homes in New York could have COVID-19-positive patients

While the nursing home population's high-risk nature has been recognized by the Centers for Disease Control and Prevention, the CDC has yet to release any aggregated trends on COVID-19 in nursing homes. As of March 30, the CDC shared that there were 400 facilities with confirmed cases, while data from the states suggest that at least 2,300 nursing homes have COVID-19 cases. CarePort conducted a deep-dive analysis of 115 nursing home facilities in New York, representing 23,611 nursing home residents and 19% of nursing homes in the state.

As of April 16, 2020, more than 90% of New York City nursing homes in the CarePort sample were re-porting COVID-19 infections. Experts recognize that the infection rate is most likely higher than reported given the lack of testing. Based on our analysis of real-time symptoms and diagnosis data aggregated from nursing homes:

- 93% of nursing homes in New York City have COVID-19-positive patients.
- Furthermore, in 45% of New York City nursing homes, COVID-19 patients made up more than 10% of the population.

Of note, clusters of COVID-19 patients may be purposeful and not indicative of an outbreak in some cases. A common strategy for containment is to cohort COVID-19 patients. Some nursing homes have isolation rooms specifically designed for housing infectious patients. However, in areas where there are not enough isolation rooms for COVID-19 patients, nursing homes are converting entire buildings or wings to house COVID-19-only patients.

41% increase in nursing home patients reporting COVID-19-related symptoms (fever, cough, shortness of breath or pneumonia) in COVID-19 hot spots

Because of discrepancies around the availability of testing and the lag in testing data, CarePort also looked at COVID-19-related symptoms such as fever, cough and shortness of breath, as well as the COVID-19-related diagnosis of pneumonia.

At baseline, nursing home residents will have some level of fever, cough and shortness of breath symptoms, as well as pneumonia. CarePort therefore looked at the relative increase for each of these symptoms compared to the facility's previous year's prevalence rate, as well as its rate compared to the national average. CarePort found that in New York, 58% of providers experienced a spike – as defined by a 1 standard deviation increase from the previous year's symptom prevalence, and a current prevalence rate greater than 1 standard deviation in the national average – in one or more of the four COVID-19-related symptoms.

This sudden increase in patients reporting COVID-19-related symptoms over baseline is concerning when considering that the trajectory of COVID-19 transmission follows an exponential growth path. It points to a potential surge of COVID-19 in nursing homes – or a surge that has already happened and is not yet confirmed due to lack of testing – in hot spot areas such as New York. Given how especially vulnerable nursing home residents are to COVID-19 infection, it is important to track the rise of COVID-19 in nursing homes. Until testing is more widely available, having real-time data on COVID-19-related symptoms provides health systems and public health officials with a leading indicator of COVID-19 infections. At that point, nursing homes should be prioritized as care settings for wide-scale testing.

About CarePort

CarePort is an Allscripts Company that provides a care coordination network used by 1,000 hospitals and 180,000 post-acute providers in 43 states. We share this data in the hopes of improving the lives of all Americans, consistent with Allscripts' mission of partnering with clients to build open, connected communities of care, and our belief that when such conditions are created, innovation flourishes. To subscribe to additional insights, please visit www.covidtoc.com.