

**RAPID RESPONSE REPORT ON  
DEDICATED RESOURCES FOR COVID-19  
APRIL 8, 2020**



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## INTRODUCTION

As the COVID-19 pandemic progresses, policy makers and health care workers are progressively trying to determine best practices for handling the disease – particularly when caring for infected patients. One key question that emerges is whether having dedicated resources – spaces and services – for COVID-19 effectively controls the spread, decreases the severity, and mitigates the cost of the disease – in terms of costs to health care, societal disruption, individual health outcomes (such as scarring of the lungs), and, ultimately, lives lost.

**The purpose of this rapid review is to examine evidence for the separation of healthcare resources during pandemic medical management – both physical separation in terms of separate structures for dedicated COVID care, as well as strategies to create separation within existing structures, or policies to prevent overlap and exposure between point sources of care and health personnel.**

Countries further ahead in the spread of COVID-19 have begun to recommend dedicated health care resources for COVID patients – especially in the form of facilities and personnel. In Italy, for instance, the vice-premier of Lombardy recently announced that sending COVID-19 patients into hospitals alongside uninfected patients was “the biggest mistake” they made,<sup>i</sup> and he recommended setting up separate, COVID-exclusive structures as an alternative. In Canada, similar realizations are starting to emerge, with epidemiologists suggesting British Columbia’s measures to prevent health care workers from working at multiple sites from March 26 onward<sup>ii</sup> may have played a key role in ‘flattening the curve’ in the province, while other provinces continue to see surging numbers.<sup>iii</sup>

In Ontario, where the case rate continues to grow, separation measures were enacted much later than in BC. For example, isolation measures separating infected residents from healthy residents at Pinecrest Nursing Home in Bobcaygeon were only implemented on April 3, after 16 residents had died from the virus – a number which rose to 26 by April 7<sup>th</sup>.<sup>iv</sup> Previously, many residents were only separated from one another by a curtain.

New Brunswick (NB) began to introduce measures to separate resources even prior to announcing a state of emergency on March 19, 2020. For example, ALC patients were actively moved to available care homes to create more space in hospitals. NB also has measures in place to keep COVID-19 out of doctors’ offices and hospital waiting rooms, including virtual appointments with family doctors,<sup>v</sup> as well as instructions for symptomatic individuals to call 811 for a triage and to arrange an appointment at one of the Regional Health Authorities’ COVID-19 Assessment Centres, and to call ahead to their local emergency departments to prepare them for the arrival of a potential COVID-19 patient in the case of extreme symptoms.<sup>vi</sup> However, as cases increase in the province, hospitalizations are likely to increase as well; and it will be beneficial for New Brunswick to review health care separation measures implemented around the world and potential, or anticipated, outcomes related to these practices.

To this end, this rapid response explores

- **Where dedicated health care facilities/separation measures are being implemented,**
- **How these measures have been put into practice, and**
- **Why countries are implementing them, including early evidence of potential outcomes.**

The experiences of these other locations ahead of NB in their COVID trajectories supports a separation of resources, as discussed below. However, the ways in which the key findings and recommendations in the literature could be realized in practice depend on the unique needs and layout of this province.

## SUMMARY OF MEASURES

Health care specialists around the world identify health care facilities such as hospitals and nursing homes as “hotspots” for community transmission of COVID-19.<sup>viiiviii</sup> As a result, there is consistent, widespread emphasis on the need to enact treatment measures that mitigate the spread of COVID-19 in these institutions. Below are findings from the literature detailing recommended and existing strategies for reducing the spread and impact of COVID-19 through treatment separation measures, including measures aimed at both patients and personnel. Key recommendations and existing measures include (note these are not mutually exclusive)

### Establishing separate facilities

- Treating cases of COVID-19 outside of hospitals, such as in community or in other existing or quickly erected facilities, such as mobile clinics and dedicated COVID-19 medical centres, or designating certain existing facilities as COVID-19 only
- Establishing or repurposing health care facilities to care for uninfected patients outside of hospitals to reduce community transmission and increase hospital capacity for COVID

### Separate spaces within existing facilities for COVID-19 patients

- Emptying a selection of currently occupied hospital beds to be dedicated to COVID-19 cases, which will
  - Enable placement of infected patients in the same area of the hospital
  - Separate infected patients from un-infected patients
  - Facilitate care and conserve supplies

### Designating medical personnel

- Creating an infection prevention team to focus on protecting health care workers and other patients from infection, as well as tracking and investigating spread of COVID-19 within medical facilities
- Preventing health care workers from working in more than one location
- Reassigning medical personnel across specialties to allow for designated COVID treatment staff

### Separating patients and personnel within facilities

- Setting up dedicated COVID-19 assessment centres separate from hospitals and arranging special transportation and receiving areas for infected patients who need to go to the hospital immediately
- Dividing emergency rooms to allow for the segregation of incoming infected patients and uninfected patients (determined by local screening practices)
- Splitting healthcare staff into non-overlapping teams to ensure that if one team member contracts COVID-19, the entire department of personnel is not lost to quarantine
- Assigning specific hospital staff to treat only COVID-19 patients in a designated, self-contained hospital area in which infected patients are grouped by required levels of care

### And alternative means of reducing transmission

- Treating all incoming hospital patients as if they are infected
- Tracking and quarantining medical professionals who had close contact with an infected individual without the recommended protective equipment
- Using available technology (e.g., Telemedicine, video conferencing, etc.) to limit contact with diagnosed or potential COVID-19 patients whenever possible

## LITERATURE REVIEW

### Practices Established by Region

#### In Canada

##### British Columbia

As briefly mentioned in the Introduction, it is believed that the “curve” is flattening in BC due to early measures to prevent health care workers from working in more than one location, thus reducing community transmission.<sup>ix</sup> Moreover, near the end of March, hospitals in BC relocated a large number of patients requiring alternative levels of care to empty nearly 4,000 hospital beds in designated, primary COVID locations – not only to separate infected patients from the uninfected but also to reduce demand for face masks and other protective gear. This was meant to enable medical personnel to wear a single supply of gear throughout a shift, further decreasing possibility of personnel infection when changing gear multiple times a day. By maintaining a count of dedicated COVID-19 “surge” beds, officials can further determine when they are close to running out of space in designated locations.<sup>x</sup>

Currently, 19 hospitals in BC have been designated as primary COVID treatment centres;<sup>xi</sup> although elective surgeries have been cancelled, these facilities continue to care for non-COVID patients, with separate acute care units in each set aside to handle incoming, more severe cases of COVID-19. The province has also taken steps to transform the Vancouver Convention Centre into a makeshift hospital capable of housing up to 270 COVID patients.<sup>xii</sup>

##### Ontario

In Kingston, Ontario, the General Hospital has relocated a number of non-infected patients to free up hospital beds, thus allowing the general hospital to set up an isolation unit dedicated for cases of COVID-19. The city has also set up COVID-19 assessment centres separate from hospital emergency rooms and arranged special transportation for infected patients who need to go to hospital right away, where they are received at a specialized, isolated receiving area and segregated from uninfected patients arriving.<sup>xiii</sup>

In cities across Ontario, hospitals are taking measures to increase the number of available beds – either through relocating patients, cancelling services, or creating new spaces. Recent projections show the province has the system capacity to handle COVID-19 cases in the best-case scenario; however, in the worst-case scenario, hospital bed capacity could be exceeded within one week.<sup>xiv</sup> The William Osler Health System, for instance, is setting up “surge capacity” GlobalMedic tents outside hospitals in Brampton and Etobicoke to triage incoming COVID patients before sending them to different units within hospital (the fracture unit at Brampton Civic, for example, would be repurposed to back up the emergency department).

Windsor Regional Hospital is similarly considering erecting a field hospital to prepare for a worst-case scenario, and Joseph Brant Hospital in Burlington is building a temporary, 93-bed pandemic unit onto the hospital to accommodate and confine COVID-19 patients in need of treatment, where they will be cared for by a local team of doctors who have volunteered to monitor infected patients.<sup>xv</sup> In the Kingston Health Sciences Centre, patients from remote northern communities are no longer being brought in for care – a step taken to protect the northern population from exposure to the virus.<sup>xvi</sup> If hospital space becomes further constrained in the coming days, it is possible medical facilities could lease space elsewhere, such as in hotels, as the government has recently given hospitals permission to do so.<sup>xvii</sup>

### **Quebec**

In Quebec, the government has “earmarked” 4,000 hotel rooms that could be used for medical service under public health emergency laws.<sup>xviii</sup> By housing “non-infected semi-autonomous” patients in hotel rooms, hospitals would make space for incoming COVID-19 cases<sup>xix</sup> – moreover, the relocated patients would be less likely to face exposure to infection than if they remained in hospital. If Montreal hospitals require more beds to care for COVID patients, the province is also considering temporarily reopening the currently “shuttered” Hotel Dieu hospital to care for non-acute, non-infected patients.<sup>xx</sup>

However, it should be noted that separating infected from non-infected patients is no guarantee that patients and personnel in non-COVID facilities are not being exposed to the virus. As Dr. Zachary Levine – a doctor in Montreal – points out, many patients entering his hospital for unrelated conditions have been diagnosed with COVID-19. Consequently, while there are high-risk and low-risk treatment areas, there is no such thing as a “no-risk” area, and medical staff in non-COVID centres should take protective measures and use protective equipment whenever possible.<sup>xxi</sup>

### **Nova Scotia**

In Nova Scotia, patients are being redistributed across hospitals and care homes to create and maintain space for incoming COVID-19 patients. For example, in Halifax, the IWK Health Centre – which specializes in pediatric care – is temporarily providing medical care for teenagers 16-18 years old who would normally be admitted to adult hospitals. It is also accepting transfers of pediatric patients with complex needs usually treated elsewhere – to relieve pressure on the local health care system and increase capacity for other hospitals to handle the COVID-19 burden.<sup>xxii</sup>

## International

### **United States**

In the United States, a Michigan Medicine overview suggests hospitals should prepare to empty at least 30% of current beds to handle incoming COVID-19 patients. Along with recommendations to designate an emergency manager and pandemic response team, and outline a medical capacity plan, this study also suggests resourcing an “infection prevention team” to focus on protecting health care workers and other patients from coronavirus infection. This team should also create plans in case personal protection supplies run short, as well as focus on investigating exposures to COVID-19 and spread of infection within the hospital. Finally, the study states that hospitals should plan to place COVID-19 patients in the same area of the hospital to facilitate care and conserve medical supplies.<sup>xxiii</sup>

The Long Island Jewish Medical Center and Zuckerberg San Francisco General Hospital, on the other hand, are no longer attempting to separate infected patients and have instead opted to treat every patient as if they have COVID-19 as a means of (i) dealing with the problem of “crowding out” non-COVID-related conditions and (ii) reducing spread from undiagnosed infected persons entering the hospitals for other reasons.<sup>xxiv</sup> The steps taken and equipment used to maintain this level of treatment for all patients, however, are not specified, and Canadian sources on isolation strategies to preserve medical protective equipment suggest this may not be cost-effective in the long term.

In New York, which has been particularly hard-hit by the pandemic, makeshift hospitals have been established to provide the extra hospital beds needed to handle growing numbers of COVID-19 patients. Temporary structures include a 68-bed field hospital in Central Park and a 2,500-bed

emergency overflow hospital at a convention centre in Manhattan. A navy hospital ship docked in the New York harbour is being repurposed to help hospitals care for non-infected patients. <sup>xxv</sup>

Similar steps are being taken in California, where “alternate care sites” are being established to house less sick COVID-19 patients and relieve pressure on regional hospitals, increasing the capacity of the latter to care for more severe COVID cases. Alternate care sites in the state include unoccupied buildings on campuses, former arenas, previously shuttered hospitals, hotels, newly erected federal medical stations, and a naval medical ship. <sup>xxvi/xxvii</sup>

Other hospitals across the US are attempting to uphold patient separation through the adoption of “telehealth” technologies<sup>xxviii</sup> that allow medical personnel to triage and provide ongoing care for quarantined, non-severe patients without the need for face-to-face contact and possible exposure to infection. Although the level of technology used varies by hospital capacity, this strategy to decrease COVID-19 exposure can be implemented through technology as simple as telephone – as in the case of New Brunswick’s dedicated 811 COVID triage line. However, as discussed below, rural areas may not have access to virtual modes of health care, including telemedicine.

The different health care capacities in rural and urban areas across America is the focus of another review that emphasizes the importance of finding alternate centres of care for rural areas, largely due to the general lack of medical supplies, specialists, and support staff in rural hospitals. <sup>xxix</sup> In this case, creating distinct areas for COVID care is recommended as a strategy to lower the risk of essential staff becoming sick – though, doing so would not guarantee protection from infection, and the costs associated with developing dedicated facilities could require government assistance.

### **Europe - General**

The European Centre for Disease Prevention and Control (ECDC) recently released a guide for health care facilities on practices to prevent and control COVID-19 infection. <sup>xxx</sup> Due to the large scope and depth of the document, not all recommendations can be included in this report. However, some key suggestions related to the dedication of resources for COVID-19 patients include (i) implementing telephone and online triaging practices to reduce contact with healthcare; (ii) creating designated areas for COVID-related procedures, such as swabbing; (iii) arranging for the separation of infected and non-infected patients, including designated bathrooms for each; and (iv) cohorting confirmed COVID-19 patients to conserve the use of personal protective equipment,

### **Italy**

Sources agree that the devastating COVID-19 outbreak in Italy was accelerated by treatment practices that involved admitting infected patients to large hospitals and allowing overwhelmed hospitals to transfer milder cases of COVID-19 to assisted living facilities, many of which were functioning as long-term care homes for the elderly. Transmission was further enabled through ambulance drivers transporting both infected and non-infected patients. To quote Carlo Borghetti, vice-premier of Lombardy, some of these practices were akin to “throwing a lit match onto a haystack.” <sup>xxxi</sup>

As an alternative, and to avoid a collapse of hospital systems, medical professionals across Italy recommend decentralizing the health care system and treating milder cases of COVID-19 in facilities within the community (mobile clinics, at home, medical follow-up via telephone, etc.), and more severe cases in separate facilities that could be developed quickly, such as mobile clinics and similar to the “fever hospitals” set up in London 200 years ago. <sup>xxxii</sup> While hospital care might be the most effective for the individual patient, they emphasize that home care and other



alternatives could be necessary to protect the community. Finally, medical experts recommend assuming that everyone who develops a fever or other COVID-related symptoms are infected – reserving tests for nursing homes and other potential hotspots for infection to conserve supplies while protecting the most vulnerable populations.<sup>xxxiii</sup>

### **Spain**

The need for more hospital beds in Spain has led to the repurposing of various establishments as temporary dedicated COVID-19 hospitals. In Madrid, for instance, hotels have been closing their doors to guests and are now functioning as COVID care facilities for patients with milder symptoms.<sup>xxxiv</sup> Meanwhile, the IFEMA exhibition centre has been converted into a frontline COVID-19 hospital. With 6,000 beds for COVID patients, this makeshift hospital is now the largest hospital in Spain.<sup>xxxv</sup>

### **United Kingdom**

In the United Kingdom, a government report on reducing the risk of transmission of COVID-19 in hospital settings<sup>xxxvi</sup> recommends isolating COVID-positive patients in negative pressure isolation rooms or in single rooms, when capacity allows. If capacity is lacking, it suggests creating dedicated, self-contained cohort areas within a hospital for both infected patients and staff assigned to care for them – so as to reduce transmission to non-infected patients. While many sources recommend cohorting infected patients, this particular report goes even further to recommend cohorting practices that differentiate between required levels of care, such as grouping individuals according to underlying conditions (i.e., immunocompromised) and – in the case of children – according to age group and childhood vaccination status. Other UK studies<sup>xxxvii</sup> voice the concern that medical personnel could be repeatedly exposed to infection, though at one London hospital such exposure might be more limited, as the cancellation of elective surgeries is allowing accident and emergency doctors to be designated to the care of COVID patients while other staff – such as orthopaedic personnel – are being redistributed across specialities to care for other medical conditions.

### **China**

In Wuhan, a number of temporary hospitals were built to care for COVID patients – some erected in as little as six days.<sup>xxxviii</sup> Meanwhile, at a hospital in Shenzhen that specializes in treating COVID-19 patients, technology is being used to increase separation between infected patients and health care workers. In this institution, a variety of robots have been deployed to perform basic health care tasks – such as providing videoconferencing services between infected patient and medical personnel and monitoring body temperatures.<sup>xxxix</sup> While this level of technology may not be available in Canadian hospitals, the use of technology to monitor patient symptoms demonstrates a novel way in which to approach patient isolation and could represent options for treatment in future years, as technological advances continue around the globe. It also suggests that the technology that is available in NB (e.g. cell phones, tablets) can be used to communicate with patients while maintaining distance.

### **Hong Kong and Singapore**

According to an American review,<sup>xl</sup> measures taken to prevent transmission of COVID-19 to health care workers in Hong Kong and Singapore differ slightly from those in Europe and North America – and have proven much more effective. Hospitals in Hong Kong and Singapore treat patients with COVID-related symptoms or potential exposure to the virus in separate hospital wards and clinics with separate medical teams. This is quite similar to practices implemented and/or recommended in many European and North American hospitals; however, when infections are detected in medical facilities in Hong Kong or Singapore, only personnel who had close contact (i.e., spent 15 minutes in a proximity of less than 6 feet) with an infected, undiagnosed patient are required to quarantine, while others who had brief contact are asked to self-monitor for symptoms.

In this way, these health care systems are not required to temporarily close facilities or quarantine all involved medical personnel, thus decreasing the disease burden on the medical system.

*“Western health care systems have been built around the concept of patient-centered care ... but an epidemic requires a change of perspective toward a concept of community-centered care.”<sup>xli</sup>*

## IMPLICATIONS FOR NEW BRUNSWICK

When examining strategies implemented elsewhere, it is important to consider the unique demographic and geographic characteristics of New Brunswick and steps that could be taken here to ensure the wellbeing of our more vulnerable populations. Not only does New Brunswick have a rapidly aging population – a large proportion of which has been diagnosed with chronic health conditions – but nearly half of New Brunswickers also live in rural areas.<sup>xlii</sup> Extrapolating from an American review of rural health care during the COVID-19 pandemic,<sup>xliii</sup> we expect COVID infections could hit rural communities particularly hard, given the smaller capacity of rural hospitals, as well as limited broadband constricting access to virtual health care options, such as telemedicine. In a rural Ontario hospital, staff are finding creative ways to address the lack of essential supplies, such as engineering ways to increase ventilator capacity.<sup>xliiv</sup> In rural Idaho, another solution to relieve the health care burden is by evaluating patients in their cars, before they enter a health care facility<sup>xliv</sup> – a method similar to New Brunswick’s drive-thru swabbing centres.

Other separation practices are being established in New Brunswick to minimize COVID-19 transmission and to prepare for increasing cases and hospitalizations. For instance, shortly after the first case of COVID-19 was diagnosed in New Brunswick, the government elected to move 65 seniors requiring alternate levels of care out of hospitals and into nursing homes to free up hospital beds for incoming COVID-19 patients.<sup>xlvi</sup> As suggested above, dedicating such space to COVID-positive patients could allow for the isolation of infected patients and the conservation of protective equipment if steps are taken to cohort positive patients together.

However, it is extremely important to note that while it can be beneficial to separate COVID and non-COVID patients, we cannot assume separation means that rooms, units, and facilities dedicated to non-COVID patients are free from infection.<sup>xlvii</sup> Treating everyone entering a medical facility as if they are infected with COVID-19 would be an effective way to prevent the spread of the disease from asymptomatic and/or undiagnosed patients; however, this is possibly the most expensive way to mitigate spread, as doing so would require even more medical personnel and protective personal equipment than is currently available in-province.

With the movement of more seniors from hospital beds into nursing homes – many of which are already at full capacity<sup>xlviii</sup> – it is also important for the province to consider ways to handle space constraints amid the need for separation policies in long-term care homes. In Ontario’s Pinecrest Nursing Home,<sup>1</sup> for example, staff were aware of the importance of separating healthy and infected residents, but space constraints initially prevented the movement and isolation of residents. Employees commented that while larger facilities may have the ability to isolate wings or entire buildings of their organization, this isn’t a possibility for smaller care facilities.<sup>xlix</sup> Although the health care systems and long-term care facilities in New Brunswick and Ontario are not

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<sup>1</sup> Results of early failure to separate infected and uninfected residents are discussed in the Introduction.

identical, a lack of space is a common concern locally – in New Brunswick nursing homes and hospitals.

One potential way to address this problem is to assign existing non-health care facilities, or quickly erect new temporary facilities, to be dedicated COVID-19 treatment centres – i.e., field hospitals. Although no official steps have been taken to establish a treatment centre separate from existing medical facilities, authorities in Moncton have considered using the Coliseum, a local hockey arena, as a makeshift hospital if the pandemic worsens.<sup>i</sup> So far, however, there is no indication whether such a treatment centre would be used to keep infected patients out of local hospitals or handle patient overflow.<sup>2</sup>

It should also be noted, again, that while establishing separate COVID facilities could address the issue of space constraints, this strategy is unlikely to prevent infection from spreading at non-designated hospitals from asymptomatic and/or undiagnosed patients and personnel. Moreover, it is possible that if existing resources and staff are allocated to off-site facilities, other medical institutions could be less well equipped to handle in-hospital spread as a result. Another issue would be the buy-in and morale of healthcare staff assigned to the designated COVID sites.

Other suggestions listed above may not reflect current practices in New Brunswick but could be considered feasible for our province to adopt. For instance, the strategy of assigning health care workers to one location was initially implemented in BC for care home workers, but similar measures could effectively be put in place for doctors, hospital RNs, pharmacists, and other care professionals who work in more than one location (buildings and/or departments within a hospital). The benefits of implementing such a policy would be directly applicable to New Brunswick; after all, two Shoppers Drug Marts in Saint John were recently closed after an employee who worked at both locations tested positive for COVID-19.<sup>ii</sup> Similarly, a Shannex employee working at two separate care facilities in New Brunswick was recently diagnosed, resulting in concerns over possible transmission at both locations.<sup>iii</sup> While assigning pharmacists and other health care workers to single locations would not stop community transmission entirely, doing so could greatly reduce risk of transmission and decrease costs and loss of access to resources due to temporary closures for cleaning.

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<sup>i</sup> [https://www.cbc.ca/news/covid-19/italy-covid-19-outbreak-lessons-1.5517520?ref=mobilerss&cmp=newsletter\\_CBC%20News%20Top%20Headlines%20%20%E2%80%93%20Morning\\_716\\_14989](https://www.cbc.ca/news/covid-19/italy-covid-19-outbreak-lessons-1.5517520?ref=mobilerss&cmp=newsletter_CBC%20News%20Top%20Headlines%20%20%E2%80%93%20Morning_716_14989)

<sup>ii</sup> <https://theprovince.com/news/local-news/covid-19-long-term-care-workers-ordered-to-work-at-one-facility-only/wcm/f4ca396f-cfbe-4646-8967-c1a13fdd7751>

<sup>iii</sup> [https://www.cbc.ca/news/canada/british-columbia/bc-ontario-quebec-covid-19-1.5524056?ref=mobilerss&cmp=newsletter\\_CBC%20News%20Top%20Headlines%20%20%E2%80%93%20Morning\\_716\\_16861](https://www.cbc.ca/news/canada/british-columbia/bc-ontario-quebec-covid-19-1.5524056?ref=mobilerss&cmp=newsletter_CBC%20News%20Top%20Headlines%20%20%E2%80%93%20Morning_716_16861)

<sup>iv</sup> <https://www.cbc.ca/news/canada/toronto/pinecrest-residents-coronavirus-separation-nursing-home-1.5523322>

<sup>v</sup> <https://www.cbc.ca/news/canada/new-brunswick/public-health-doctor-s-appointments-virtual-covid-19-1.5500953>

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<sup>2</sup> Currently, the Coliseum is being used as drive-thru COVID-19 testing centre for Horizon Health Network that allows individuals with appointments facilitated through Telecare 811 to be tested for infection without leaving their vehicles<sup>2</sup> – thus reducing contact with health care workers and other individuals requiring tests, decreasing likelihood of transmission.

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- <sup>vi</sup> [https://en.horizonnb.ca/home/patients-and-visitors/coronavirus-\(covid-19\)/covid-19-community-assessment-centres-by-appointment.aspx](https://en.horizonnb.ca/home/patients-and-visitors/coronavirus-(covid-19)/covid-19-community-assessment-centres-by-appointment.aspx)
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- <sup>viii</sup> <https://www.statnews.com/2020/03/21/coronavirus-plea-from-italy-treat-patients-at-home/>
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