



Date: December 13, 2020

To: Acting Mayor Austin Quinn-Davidson

Thru: Heather Harris, Anchorage Health Department Director

From: Janet Johnston, Anchorage Health Department Epidemiologist

Subject: Rationale for restrictions in Emergency Order EO-16 Modified Hunker Down Order

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A handwritten signature in blue ink, appearing to read "JMJ", is positioned to the right of the "Thru:" and "From:" lines.

Need for restrictions

Measures outlined in Emergency Order 16 were supported by the Anchorage Health Department (AHD). The actions were intended to reduce the strain on the health care system to avoid a situation where (a) hospitals run out of critical resources, including ICU beds or appropriate ICU and respiratory specialists; (b) mortality increases with death due to COVID-19 becoming a daily occurrence among Anchorage residents; and (c) the level of community transmission precludes re-opening schools for in-person learning due to risks of infection to teachers and students.

On Monday, November 30th, there was only one staffed adult ICU bed available between the three acute care hospitals in Anchorage. Between December 1st and December 10th, the number of available staffed adult ICU beds ranged from 5 to 18, with the minimum occurring on four of the ten days.

Between November 11th and November 24th, Anchorage averaged 315 new cases per day for a total of 4,407 new cases during those two weeks. As of mid-November, the effective infection rate (R_t) for Anchorage had plateaued at approximately 1.2 since the end of September. R_t is the average number of individuals that each COVID-19 case infects.²⁰ R_t of 1.2 predicts continued sustained growth of average daily new case counts, which is what we saw in Anchorage from late September through November.

In Anchorage, approximately 15% of COVID-19 patients have required hospitalization. According to a large study by the Centers for Medicare and Medicaid Services (CMS), 50% of Medicare patients hospitalized for COVID-19 require a stay more than seven days, with 16% requiring 16 days or longer in the hospital and 9% staying longer than 20 days.¹ Data from 526 hospitals across 21 states, including data on all adult COVID-19 patients, showed a similar length of inpatient length of stay (median 11 days, interquartile range 6 to 20 days) and an ICU length of stay of 6 days for patients who survived and 8 days for those who died, with an interquartile range of 3 to 12 days for both groups.²

Since November 30th, the cumulative COVID-19 mortality has risen from 68 to 98 COVID-19 related deaths. With a case fatality rate of 0.45, 4,407 new cases over the past 14 days is likely to translate into approximately 20 additional deaths just among Anchorage residents recently infected with COVID-19.

Finally, the Anchorage schools have remained closed to in-person classes due to high case counts and the strain on the health care system. The Anchorage School District previously announced that they are using the CDC indicators and thresholds³ to determine when it is safe to have students return to the classroom. The CDC's highest level of risk for transmission in schools is set at greater than 200 new cases per 100,000 persons within the last 14 days. Anchorage was above 1,500 new cases per 100,000 persons for November 11th through November 14th.

Rationale behind specific recommendations restriction in EO 16:

COVID-19 is a respiratory virus that spreads through airborne transmission when an infected individual talks, sneezes, coughs, breathes, or otherwise exhales. Most COVID-19 transmission occurs via respiratory droplets that spread approximately six feet, although they may spread further with exercise, singing, or other more vigorous breathing or exhaling. However, some respiratory droplets spread further than six feet via airborne transmission. There can also be transmission if a person touches a contaminated surface and then brings their hand close to their face and inhales the virus or touches their eyes. This type of surface transmission is much less common, but it can still occur.⁴ Infectious individuals are often asymptomatic or pre-symptomatic, making prevention more difficult.⁵

The restrictions in EO-16 are designed to reduce respiratory transmission of the COVID-19 virus. It has been well established that masking and physical distancing (6-foot minimum) reduce the spread of COVID-19. Spread is also more likely indoors than outdoors, when more people are present, and the more time people spend together.¹⁹ See the review by Bhagat and colleagues for details regarding the effect of building ventilation on the spread of COVID-19 through airborne particles.¹⁷

In addition to focusing on the biology of how the COVID-19 virus spreads, we consulted published evaluations of actions taken in other locations earlier in the pandemic in determining EO-16 recommendations. Since the CDC recommends a layered strategy to reduce the risk of exposure to COVID-19¹⁸, we focused on combinations of the following mitigation measures whenever possible:

- Increasing mask usage
- Maintaining physical distance
- Ensuring adequate airflow
- Reducing the number of people present
- Reducing the time people are gathering with others

This layered approach, sometimes referred to as the Swiss Cheese model, recognizes that while no one mitigation measure is 100% effective, combining multiple imperfect measures can lead to an extremely effective system to prevent virus spread.²¹

Support for specific measures

- Limit outings and physical contact with those outside their household. Maintain a physical distance of at least six feet from any person outside their household.

This requirement is based on what is known about how the virus spreads, as described above. On December 4th, the CDC issued summary guidance for public health strategies to address community transmission and related deaths.⁶ According to that guidance, "Maintaining physical distance (≥ 6 feet) lowers the risk for SARS-CoV-2 infection through exposure to infectious respiratory droplets and aerosols and is important, even if no symptoms are apparent, because transmission can occur from asymptomatic infected persons (2,3). Outside the household setting, close physical contact, shared meals, and being in enclosed spaces have all been associated with an increased infection risk (4–7)."

- Gathering limitations

Gathering limitations are designed to provide more specific guidance on reducing contact with others outside one's household. The CDC summary guidance says to avoid nonessential indoor spaces and crowded outdoor settings. Yale School of Management researchers Matthew I. Spiegel and Heather Tookes created a time-series database of business closures and related restrictions for every county in the United States and used it to evaluate the effect of various restrictions on COVID-19 fatalities.⁷ This analysis found that limiting gatherings to 10 or fewer individuals predicted a reduction in COVID-19 fatalities four weeks later. According to the COVID-19 Event Risk Assessment Planning Tool from the Georgia Institute of Technology estimates that there is a 39% risk that at least 1 COVID-19 positive individual will be present at an event in Anchorage that has 10 or more persons present.⁸ As evidenced by the large variation in gathering size limits across the country, there is no magic number for how small a gathering should be. In reality, no gathering is 100% safe. The risk that someone in a group is infected increases exponentially with the number of attendees.⁹ Therefore, to reduce this risk of their being at least one COVID-19 positive individual to well below 39%, EO 16 set the gathering limitation to 6 individuals. Exceptions were allowed to accommodate various types of gatherings considered essential to the community; however, AHD continues to remind the public that no gatherings are safe. Whenever possible, gatherings should be conducted virtually, canceled, or postponed.

- Hospitality Industry. All restaurants, bars, breweries, and nightclubs and similar entities are closed for indoor service.

Indoor dining is a particularly high-risk activity because individuals from multiple households spend extended periods not wearing masks, often within 6 feet of each other. Multiple studies have implicated indoor dining as a source of COVID-19 transmission since the start of the pandemic. The CDC published findings from a case-control investigation of patients at 11 US health care facilities that found adults who tested positive for COVID-19 were twice as likely to have reported dining at a restaurant than those with negative test results.¹⁰ A recent study in Nature using Google mobility data identified restaurants' re-opening as the leading source of additional infections following COVID-19 related shutdowns.¹¹ Spiegel and Tookes also found that restaurant closures were associated with reduced COVID-19 mortality 4 and 6 weeks later.⁷

- Indoor entertainment and recreation facilities closed.

The rationale for closing indoor entertainment and recreation facilities is similar to the rationale for closing restaurants. The risk here comes from people taking off masks to eat and drink and people from multiple households spending prolonged periods in the same indoor space. Even with physical distancing, prolonged exposure increases the risk of aerosol transmission.¹⁹

- Organized sports closed to indoor competition and subjected to physical distancing requirements for indoor practices and outdoor competition or practice.

The organized sports restrictions are based on CDC's guidance for youth sports organizations. As described by the CDC, the "more people [an athlete] or coach interacts with, the closer the physical interaction, the more sharing of equipment there is by multiple players, and the longer

that interaction, the higher the risk of COVID-19 spread." ¹⁵ Recognizing the value of organized sports for both physical and mental health, restrictions were set to allow indoor team-based practice as long as athletes and coaches can maintain 10 feet of physical distance for the entire duration of the practice, including during all drills.

In terms of COVID-19 transmission, outdoors is almost always safer than indoors. EO-16 encourages outdoor exercise and allows for organized sports to hold both practices and competitions outdoors. Because COVID-19 can still spread outdoors if there is close contact with an infected individual for a sufficiently long period, EO-16 still requires masking for outdoor group activities where physical distance cannot be maintained. However, athletes may remove masks outdoors if they can generally maintain sufficient distance from others while exercising.

- Indoor gyms, recreation, and fitness centers capped at 25%.

Both anecdotal evidence and more systematic studies have shown an association between gyms and COVID-19 spread. In Ontario, Canada, a spin studio was responsible for 61 COVID-19 cases after one asymptomatic COVID-19 case attended a class.¹² The previously cited Nature study identified gyms and fitness centers as the second-highest risk location for COVID-19 transmission¹¹, and the Spiegel and Tookes study found that closing gyms were associated with reduced COVID-19 mortality both 4 and 6 weeks later.⁷ Again, this fits with the science of disease transmission because people breathe out harder, causing respiratory droplets to travel further during exercise.

Unlike in a bar or restaurant, patrons at a gym or fitness center can wear a mask while exercising, and many gyms have the space to enable physical distancing. Therefore, rather than close gyms, EO-16 allows gyms to remain open at 25% capacity to reduce crowding, as long as patrons and employees wear a mask or face covering at all times and patrons from different households are separated by at least 10 feet while exercising and by at least 6 feet at all other times.

- Salon and personal care services providers limited to 25% capacity. Services requiring the removal of a mask prohibited.

Salon and personal care services require close contact but services can be provided while both the provider and the client are masked. Also, the number of people who come in close contact with one another can be limited at any one time. The risk is higher for the provider than for the patron because each provider serves multiple clients per day. While the risk cannot be totally mitigated, masking, distancing between provider/client pairs, and capacity limits help to mitigate the risk. The CDC has documented that no transmission occurred from two symptomatic hair stylists with confirmed COVID-19 to 139 clients, all of whom wore face coverings. Furthermore, no secondary transmission was detected.¹³

- Retail and other public facing businesses limited to 25% of capacity with physical distancing (minimum 6 feet) between non-household groups.

The Nature study using mobility data identified grocery stores as high-risk locations for disease transmission, especially in poorer neighborhoods where stores tend to be smaller and more



crowded.¹¹ That study further concluded that reducing capacity to 20% could reduce disease transmission by 80% compared to fully re-opening stores while only reducing visits by 42%.

The Harvard Business Review has also provided thoughts on what safe shopping looks like during the pandemic. The first point they make is that "to lower the risk of transmission, retailers must lower the density of people within the store. The easiest way to do that is to limit the number of customers in the store at any one time."¹⁴

Since disease transmission can occur within both essential and nonessential business, it was determined that rather than closing nonessential stores, all stores could remain open as long as they enforced the mask mandate, provided for physical distancing, and limited capacity to 25%.

- Remote work. Employers must require employees to work from home when their work can be accomplished remotely without significantly impeding business operations.

By requiring employees to work from home when possible, employees reduce the possibility of disease transmission in the workplace. In a case-control investigation of patients from 11 US health care facilities, adults who tested positive for COVID-19 were almost twice as likely to report exclusively going to an office or school setting in the two weeks before illness onset, compared to those who tested negative. These findings were similar in employment settings.¹⁶

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