

COVID-19 Monitoring and Response for U.S. Air Force Military Basic Trainees — Texas, March-April 2020

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Summary

What is already known about this topic?

COVID-19 has had significant risk of spread in settings involving congregate living and training, yet certain essential functions need to continue despite these risks.

What is added by this report?

This report shows the nonpharmaceutical interventions (NPI) used to limit transmission amongst the 10,579 basic trainees at Joint Base San Antonio-Lackland during the COVID-19 pandemic to 5 positive cases (47 per 100,000).

What are the implications for public health practice?

Despite widespread outbreaks during the COVID-19 pandemic, certain mission-critical gatherings remain essential. With additional screening, testing, administrative measures, isolation and quarantine, it is possible to continue training and suppress symptomatic infection rates.

The COVID-19 pandemic has had significant morbidity and mortality since it was first described in December 2019 (1). Based on epidemiological data showing spread in congregant settings, national, state, and local governments have instituted significant restrictions on large gatherings to prevent transmission of disease. These NPI have shown initial success in slowing the pandemic across the country (2). While most of the nation has been placed under a form of restricted movement, mission-critical operations, which continue to run, must adapt to reduce the risk of transmission for essential employees.

This report looks at the first 45 days of NPI that were made to United States Air Force (USAF) Basic Military Training (BMT) to accommodate strategies of quarantine, social distancing, early screening of trainees, rapid isolation of suspected cases, and monitored reentry into training for positive cases.

BMT is the first step in the accession of airmen into the USAF, training 40,000 new airmen per year in one location. Training at Joint Base-San Antonio-Lackland (JBSA) involves classroom lectures, small group activities, and field exercises. Each training cohort, or “flight” consists of 50 individuals who live in communal, open bay quarters and perform all daily and training activities as a group. For accountability purposes trainees are never alone, performing every activity with at least one fellow trainee. Over recent decades, BMT has had outbreaks of respiratory pathogens, such as adenovirus serotype B14 in 2007, driving implementation of head-to-foot sleeping arrangements, regular cleaning of shared equipment, and active syndromic surveillance for respiratory outbreaks (3).

Medical Interventions

The initial screening approach for COVID-19 at JBSA was based on CDC guidelines, and evaluated patients who presented to sick call (4). It required both symptoms as well as possible travel-related or known COVID-19 exposure to be eligible for testing. This strategy yielded two investigations over the first two weeks of screening. On March 10th, symptomatic screening was implemented for all trainees for symptoms of cough, subjective fever, or dyspnea. Those with positive screening were evaluated with an

interview to determine if further testing was needed, underwent nasopharyngeal sampling and PCR testing, and were isolated in a single occupancy room with daily visits from a healthcare provider or technician. The symptomatic recruits returned to training when they met a non-test based strategy requiring at least three afebrile days and seven days from the onset of symptoms. Expansion of testing to all symptomatic trainees increased the average daily test volume.

Non-Medical Interventions

Significant administrative changes were also made to the daily structure of the training. An early change was to limit BMT exposure to only essential personnel. BMT graduation ceremonies, which bring family members from around the world, discontinued allowing visitors in mid-March. Shortly thereafter, training instructors were placed under local area travel restriction to prevent travel-related infection and potential spread to trainees.

Starting on March 17th, arriving recruits were segregated to a separate area of base from the main cohort of trainees for a two week quarantine. At this time, all trainees were instructed to maintain six feet of separation for social distancing. After the first trainee tested positive, new institutional policies were implemented that included deep cleaning of all dorm rooms between graduating classes of trainees and shortening the training schedule from 8.5 to 7 weeks. In early April, universal cloth masking was introduced. While BMT had the usual number of incoming trainees through March, BMT paused taking recruits from areas with higher community transmission in April, which decreased the number of incoming trainees by approximately 40% (5).

Cases

A total of 10,579 trainees were present at JBSA for BMT during March 2020, with 4,073 (39%) beginning training during the study period. The timeline of events for the 345 (3%) trainees that met criteria for testing and further investigation is shown (FIGURE). Of those tested, 86 (25%) were under arrival quarantine and five (1%) cases were positive for COVID-19. Testing also yielded two cases of influenza B. All patients who tested positive were in arrival quarantine at time of testing.

Patient A arrived to BMT on March 17th and developed symptoms on March 22. The patient presented for sick call on March 23 and was immediately isolated. Patient B, C, and D, who were contacts of Patient A during training, presented with symptoms on March 25th, March 27th, and March 30th respectively, and all tested positive for COVID-19. Investigators could not identify the source of infection for patient A, but speculate that it may have been acquired during transit as the patient arrived from a state not reporting community spread.

Patient E arrived to BMT on March 25th and developed symptoms on the same day. The patient presented to sick call two days later and was found to COVID-19 positive. Public health investigation found that the weekend before BMT, the patient visited a large city with community spread of COVID-19.

None of the five patients testing positive required hospitalization or received any antibiotics or antiviral medications. Each was placed in isolation until he or she met the criteria described above and rejoined training.

Discussion

During the study period there were 4,534 incoming trainees joining 6,506 trainees who had already started BMT. Overall there were five cases (cumulative incidence 47 per 100,000) of COVID19 including three cases of local transmission. The combination of administrative controls, increased testing, and appropriate isolation and quarantine allowed military training to continue, albeit with reduced numbers, during the COVID-19 pandemic.

Despite the high risk of transmission in congregant settings such as BMT, as of April 18, 2020, BMT had a lower cumulative incidence rate than the United States overall (220 per 100,000) (6). Other congregant settings that have previously been studied had much higher rates, such as the Diamond Princess cruise ship, which had a 19,000/100,000 people cumulative incidence (7). Direct comparisons are not appropriate, because almost 50% of those tested on the Diamond Princess cruise ship were asymptomatic, the ship environment has higher population density, and the cruise ship had an older patient population.

Despite the communal nature of BMT, which has historically been conducive to transmission of respiratory pathogens, there were few reported symptomatic cases of

BMT transmission of COVID-19, all occurring during the initial 14 day quarantine, with no cases identified in the larger training population. Factors for successful implementation likely included early implementation of mitigation strategies before first case presented, mobilization of non-medical personnel to assist in the screening process, and flexibility of the military training staff to adjustments in programs and schedules. As the virus became more widespread in the US, rates of testing increased, resulting in the isolation of more trainees. JBSA had recently worked to accommodate the quarantine of patients who were on cruise ships, and the infrastructure that was adapted to host these additional patients was repurposed for BMT isolation and quarantine.

Limitations include possible lack of generalizability of the interventions described to institutions that are not highly structured or sufficiently resourced. This report demonstrated the success of limiting symptomatic COVID-19 infection at a single center in a military setting with adequate resources to screen personnel and with the ability to track all movement of trainees. Secondly, asymptomatic infected cases would not have been detected by symptom screening. Since there were no cases found in during the post quarantine training, however, the contribution of asymptomatic transmission in this cohort may be minor, or has been mitigated by the overall aggressive public health posture. Further studies to describe asymptomatic spread in this setting are necessary.

At JBSA, despite gathering a large recruit sample from across the country into communal residence and training, early interventions focusing on quarantine, physical distancing, and rapidly identifying and isolating potential cases demonstrated the feasibility of

continuation of operations despite the context of this respiratory disease epidemic. The disciplined and highly structured environment, as well as the youth of the population have likely contributed to the success in suppressing symptomatic case incidence and thus far preventing an outbreak.

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Disclaimer

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