The Effect of Arrival Quarantine on Subsequent COVID-19 Testing in a Cohort of Military Basic Trainees

Joseph Marcus, MD1; Dianne Frankel, DO2; Mary Pawlak, MD2; Theresa Casey, DVM3, Erin Enriquez, RN2; Heather Yun, MD1
1Infectious Disease Service, Department of Internal Medicine, JBSA-Ft. Sam Houston, San Antonio, TX 2Trainee Health Surveillance, JBSA-Lackland, San Antonio (TX)

Abstract

Background
The COVID-19 pandemic has been associated with significant spread in congregate settings and various forms of non-pharmaceutical interventions (NPI) have been implemented to prevent spread. Basic Military Training at Joint Base San Antonio is the entrance to the US Air Force and has been associated with respiratory outbreaks in the past. A two-week arrival quarantine was implemented in March 2020. Effects on subsequent testing for COVID-19 after an arrival quarantine is unknown.

Methods
The first four weekly cohorts of trainees who underwent an arrival quarantine between March 16-April 13 were monitored during their 7 week training for COVID-19 symptoms. Symptoms, medical testing, and days removed from training were collected on every patient with possible COVID-19 symptoms for trainees in quarantine or after quarantine. Arrival quarantine was associated with less testing for flu and COVID after day 14 of quarantine and first four weekly cohorts who arrived after March 16th and did complete an arrival quarantine. Arrival quarantine was associated with less testing for flu and COVID after day 14 of training. The view(s) expressed herein are those of the author(s) and do not reflect the official policy or position of Brooke Army Medical Center, the U.S. Air Force Medical Department, the U.S. Air Force Office of the Surgeon General, the Department of the Army, the Department of the Air Force and Department of Defense or the U.S. Government

Introduction

- COVID-19 has been associated with outbreaks in congregate settings during pandemic.
- Basic Military Training provides a model for COVID-19 response with insight that can guide response for other institutions drawing young, healthy people from around US with risk factors for outbreak.
- In COVID-19, utility of arrival quarantine is unknown in preventing outbreaks and decreasing subsequent testing.
- We hypothesized that quarantine would be associated with increased COVID-19 testing, and would result in overall reduced testing compared to cohorts who did not undergo quarantine.

Methods

- Retrospective analysis of 10,579 basic trainees at JBSA-Lackland
- Tests at provider’s discretion for symptomatic patients only
- Data collected: Arrival date, testing performed, symptoms at presentation, days removed from training
- Limitations: 1) Only tested symptomatic patients 2) Well-resourced training center with high testing capacity 3) Limited to symptomatic testing 4) Unable to determine effect in preventing outbreaks with low prevalence of COVID in cohort 5) Data from early in pandemic with evolving non-pharmaceutical interventions during data collection

Results

Figure 1.

- 8,006 trainees started before 16Mar and were not subject to arrival quarantine and on base during COVID-19 testing
- 2,573 trainees started between March 16-April 13, 2020 and were subject to arrival quarantine

Table 1. During Arrival Quarantine (n=144 tests) After Completion of Arrival Quarantine (n=29 tests) p-value

| COVID tests per 1000 trainee-weeks | 10.5 | 2.5 | <0.0001
| Respiratory Viral Panel | 8 (15%) | 0 | 0.05
| Flu | 40 (74%) | 11 (38%) | 0.001
| Days Removed From Training if COVID-19 Negative | 3 (2-6) | 2 (2-3) | 0.01

Table 2.

| COVID cases per 1000 trainee-weeks | 14.3 | 2.3 | <0.0001
| Symptoms | 22 (10%) | 3 (10%) | 0.99
| Testing during first four weeks before implementation of arrival quarantine | 21 (11%) | 0 | 0.64
| Chest Pain | 10 (5%) | 0 (0%) | 0.85
| Headache | 15 (8%) | 0 (0%) | 0.67
| Fever | 0 (0%) | 0 (0%) | 0.67
| Nausea | 0 (0%) | 0 (0%) | 0.67
| Vomiting | 2 (1%) | 0 (0%) | 0.67
| Cough | 10.5 (23%) | 0.5 (1%) | 0.05
| Headache | 5 (11%) | 0 (0%) | 0.85
| Vomiting | 0 (0%) | 0 (0%) | 0.85
| Cough | 3 (8%) | 0 (0%) | 0.85
| Headache | 0 (0%) | 0 (0%) | 0.85

Conclusions

- Amongst trainees those who underwent arrival quarantine, most of their symptomatic testing occurred during quarantine with significantly reduced testing afterwards.
- Arrival quarantine led to less symptomatic testing later in training compared to group that did not undergo arrival quarantine.
- Quarantine appears to be an effective strategy to decrease symptomatic testing and possibly decrease in overall symptoms.
- Limitations: 1) Only tested symptomatic patients 2) Well-resourced setting with ability to rapidly isolate may limit generalizability, 3) Seasonality limits interpretation of other tests, such as flu 4) Unable to determine effect in preventing outbreaks with low prevalence of COVID in cohort 5) Data from early in pandemic with evolving non-pharmaceutical interventions during data collection

Figure 2.

Bar graph showing testing symptomatic COVID-19 testing by week for first four cohorts that underwent 14 day quarantine showing more testing earlier in training. Weeks 0, 1, and portions of week 2 represent time in quarantine.