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BASIC MILITARY TRAINING OVERVIEW



**COVID-19 Monitoring and Response Among US Air Force Basic Military Trainees
San Antonio, Texas | March-April 2020**

Captain Joseph Marcus, MD

Disclaimer

- This presentation is focused on the published paper
 - Marcus JE, Frankel DN, Pawlak MT, et al. *COVID-19 Monitoring and Response Among U.S. Air Force Basic Military Trainees — Texas, March–April 2020*. *MMWR Morb Mortal Wkly Rep* 2020;69:685–688.
DOI: <http://dx.doi.org/10.15585/mmwr.mm6922e2>
- This represents the work of me and my co-authors: Maj Frankel, Maj Pawlek, Brig Gen (ret.) Casey, Col Blackwell, Col (ret.) Dolan, and Col Yun
- The statements and opinions expressed on this subject are those of the participants and not necessarily those of the U.S. Air Force or the Government of the United States.



Outline

- Epidemiology of COVID-19 response at JBSA-Lackland during COVID
- Effect of Arrival Quarantine on Subsequent COVID-19 Testing
- Perspectives as a trainee doing COVID-19 research

Background on USAF Basic Military Training

- ~ 40,000 trainees/year at Joint Base San Antonio-Lackland (JBSA)
- ~ 800 trainees arrive each week
- 75% male with most in late teens or early 20s
- Pre-health screening for underlying medical conditions
- Training involves classrooms, small group activities, and field exercises



USAF BMT Communal Living

- Cohort of 50 trainees
 - Sleeping quarters
 - Activities
- History of communicable diseases
 - Head-to-toe bunks
 - Regular cleaning of shared equipment
 - Active health surveillance

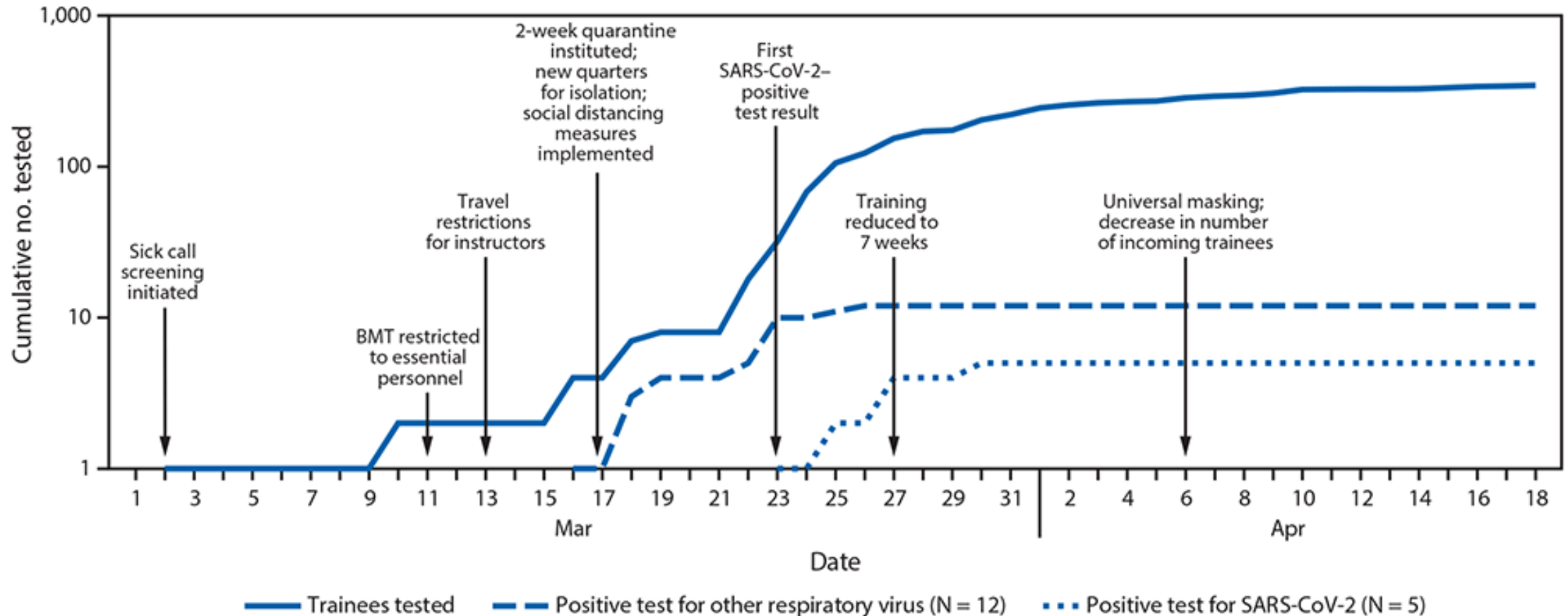


Note: Head-to-toe arrangement

Diagnostic Testing and Isolation

- All trainees were screened by training instructors and positive responses were evaluated by medical staff
- SARS-CoV-2 tests – Nasal swab, RT-PCR PCR
- Initial testing for self-reported ill patients with symptoms and recent close contact or travel from high-transmission area
- March 1-15: 2 patients tested
- March 16: Symptoms only requirement
- Symptomatic persons were isolated in single rooms and monitored; allowed to return 7 days after symptom onset and >3 days post-fever

Cumulative number of tested trainees with respiratory symptoms and positive test results for SARS-CoV-2 or other viruses and interventions



Nonpharmaceutical Interventions (NPIs)

- March 11: Essential personnel only; graduation ceremonies were closed
- March 13: Instructors restricted to local area travel restrictions
- March 17: All new recruits segregated for 2-weeks
 - Implemented physical distancing of 6' between one another



Nonpharmaceutical Interventions (NPIs)

- March 23: Schedule from 8.5 weeks to 7 weeks
- April 6: Universal use of cloth face masks
- April: Reduction in recruits from areas with higher community transmission; reduced trainee counts by 40%



COVID-19 Cases

- 10,579 trainees during study (6,506 trainees in camp)
- 4,073 arrived from March 1 – April 18
- 325 (3%) met criteria for testing
 - 86 (25%) tested during arrival quarantine
 - 5 (1%) tested positive for SARS-CoV-2
- Contact tracing for positive and flu patients; 2 incidents
- All cases did not require hospitalization or antimicrobials; all returned to training.
- 3 cases of transmission within JBSA

Summary

- 10,579 trainees,
- COVID-19 incidence was limited to 5 cases (47 cases per 100,000 persons)
 - 3 people were in contact with the first patient
- Limited transmission credited to non-pharmaceutical interventions (NPI)
 - Arrival quarantine
 - Social distancing
 - Early screening
 - Rapid isolation of suspected cases
 - Monitored reentry
- All cases detected during 14-day arrival quarantine



Limitations

- Highly structured and sufficiently resourced military base
- Base had existing facilities for isolation
- Asymptomatic cases not detected
- No COVID-19 cases identified during training after arrival quarantine, asymptomatic transmission is unlikely

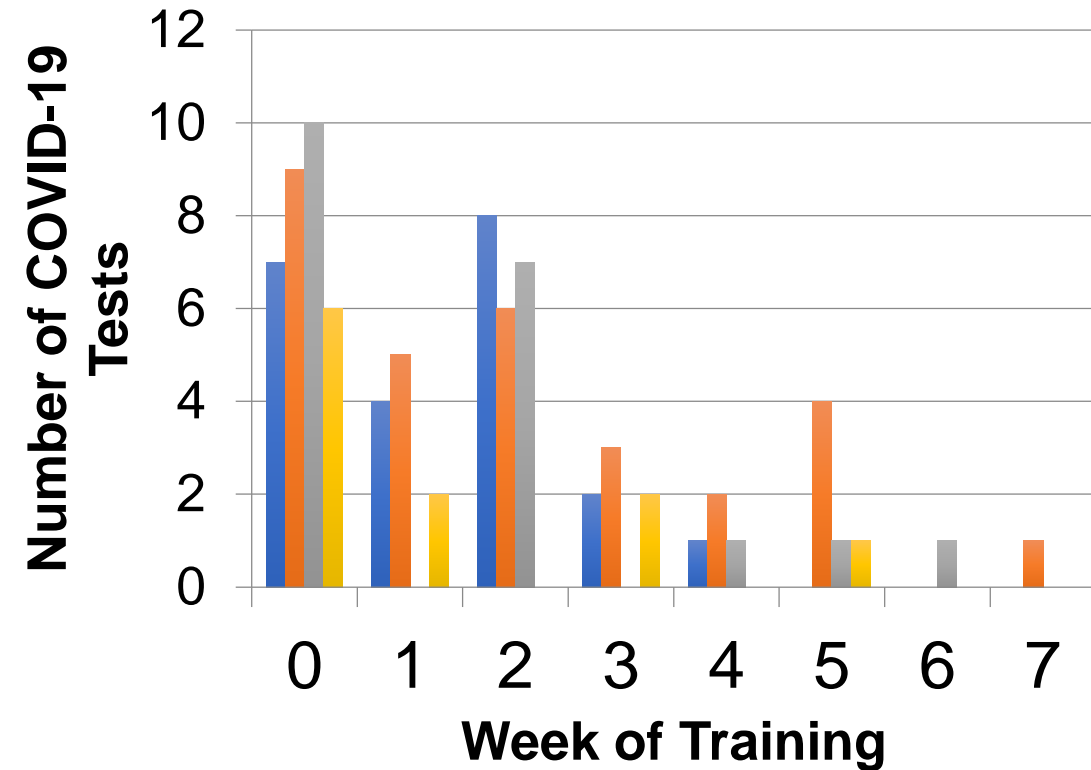


Effect of Arrival Quarantine on COVID-19 Testing

- Arrival quarantine = ancient public health intervention
- Unclear if effective with modern COVID-19 outbreak
- At this time in outbreak, limited testing capabilities nationally, no universal testing
- Looking at same data set as before (testing between March 1-April 18, 2020) , is there a difference in testing between people in arrival quarantine vs. after arrival quarantine?
- Hypothesis: Arrival quarantine is an effective NPI at reducing testing

Effect of Arrival Quarantine

- Of first four weekly cohorts that underwent arrival quarantine, most testing occurs in first two weeks, with minimal testing in later weeks.
- Reminder: Only 5 cases found



Effect of Arrival Quarantine

	During Arrival Quarantine (n=54 tests)	After Completion of Arrival Quarantine (n=29 tests)	p-value
COVID tests per 1000 trainee-weeks	10.5	2.25	<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 (2-5)	2 (2-3)	0.01

How about compared to trainees who didn't undergo arrival quarantine?

- Comparison: testing after day 14 of training between those who underwent an arrival quarantine (after March 16th) with those who didn't (arrived before March 16th)
- Significantly more testing in group without arrival quarantine
- Less testing = less symptomatic patients?

	Started training before arrival quarantine (n=215 tests)	Completed arrival quarantine (n=29 tests)	p-value
COVID tests per 1000 trainee weeks	14.3	2.25	<0.0001
Symptoms			
Chest Pain	22 (10%)	3 (10%)	0.99
Dyspnea	29 (13%)	3 (10%)	0.64
Cough	179 (83%)	16 (55%)	0.003
Headache	76 (35%)	9 (31%)	0.65
Fever	41 (19%)	4 (14%)	0.47
Chills	36 (17%)	4 (14%)	0.73
Nausea	25 (12%)	6 (20%)	0.17
Vomiting	14 (7%)	2 (7%)	0.48
Diarrhea	9 (4%)	4 (14%)	0.03
Myalgia	33 (15%)	3 (10%)	0.50
Sore Throat	111 (52%)	11 (38%)	0.17
Amnesia	10 (5%)	3 (10%)	0.20
Runny Nose	95 (44%)	4 (14%)	0.002
Signs			
T>100.4	9 (4%)	1 (3%)	0.89
SpO2<94	0	0	--
Tests Ordered			
Respiratory Viral Panel	14 (7%)	0	0.38
Flu	160 (74%)	11 (38%)	0.0001

Limitations

- Only tested symptomatic patients
- Well-resourced setting with ability to rapidly isolate may limit generalizability
- Seasonality limits interpretation of other tests, such as flu
- Unable to determine effect in preventing outbreak with low prevalence of COVID in cohort
- Data from early in pandemic with evolving non-pharmaceutical interventions during study

Summary

- NPI effective at limiting symptomatic spread of COVID-19 early in pandemic and allowing training mission to continue
- Arrival quarantine was associated with significantly less testing and perhaps less symptomatic patients later in training

Non-Military Applications for Research

- Multiple presentations between Prev Med and ID with American Camp Association, YMCA camps, and CDC
- Principles from our experience applied to overnight summer camps to effectively limit transmission

Preventing and Mitigating SARS-CoV-2 Transmission — Four Overnight Camps, Maine, June–August 2020

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Perspective as a Trainee

- COVID-19 caused disruption, but also opportunity for research
- Mission necessity to better understand viral threat
 - Efficiency, Data Reliability, and Communication are essential
- Collaboration is key between all key players, many are non-medical!
- Document your findings. You never know who may need your data in making decisions

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Questions and Answers

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