California Medical Facility (CMF) Site Visit Report

9 December 2021

UCSF University of California San Francisco

Berkeley Public Health

Richard and Rhoda Goldman School of Public Policy, University of California Berkeley

Presented by: A. Kwan*, J. Harney*, E. Noth*, R. Sklar*, S. Bertozzi*

Work done with: H. Archer, K. Lacey, A. Lerman, E. Linos, S. McCoy, R. Schell, D. Sears, B. Williams*, *on behalf of the CalPROTECT team*

* attended site visit

Given the rapidly evolving understanding of the novel SARS-CoV-2 virus and disease (COVID-19), CalPROTECT and its partners may not revise all publications and resources as new information becomes available. This report was produced based on the most updated research and our understanding of the CDCR facilities as of Dec. 9, 2021.

We encourage continued engagement with public health and medical communities regarding how best to implement the most updated recommendations based on science and evidence to prevent and manage COVID-19.

Presentation Outline

- About CalPROTECT
- Overview of select CMF-specific and CDCR-wide observations and recommendations
  - Epi, vaccination, testing
  - Behavioral science
  - Environmental
- Discussion

1. About CalPROTECT:

Overarching goal, approach and methodology

About CalPROTECT (California Prison Roadmap for Targeting Efforts to Address the Ecosystem of COVID Transmission)

CalPROTECT is a multidisciplinary team of experts in public health, medicine and infectious disease, behavioral science, environmental health, and economics from the **UC San Francisco Department of Medicine** and the **UC Berkeley Schools of Public Health and Public Policy.**

UCSF University of California San Francisco

UCSF Center for Vulnerable Populations Department of Medicine

AMEND CHANGING CORRECTIONAL CULTURE

Berkeley Public Health

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The People Lab

About CalPROTECT (California Prison Roadmap for Targeting Efforts to Address the Ecosystem of COVID Transmission)

CalPROTECT is a multidisciplinary team of experts in public health, medicine and infectious disease, behavioral science, environmental health, and economics from the **UC San Francisco Department of Medicine** and the **UC Berkeley Schools of Public Health and Public Policy.**

CalPROTECT was launched at the request of Federal Receiver Clark Kelso to:

1. Collect and analyze data about COVID-19 transmission and responses in CDCR facilities
2. Provide recommendations and as-needed feedback regarding best practices and opportunities to optimize COVID-19 response efforts in order to improve conditions for staff and residents in CDCR facilities

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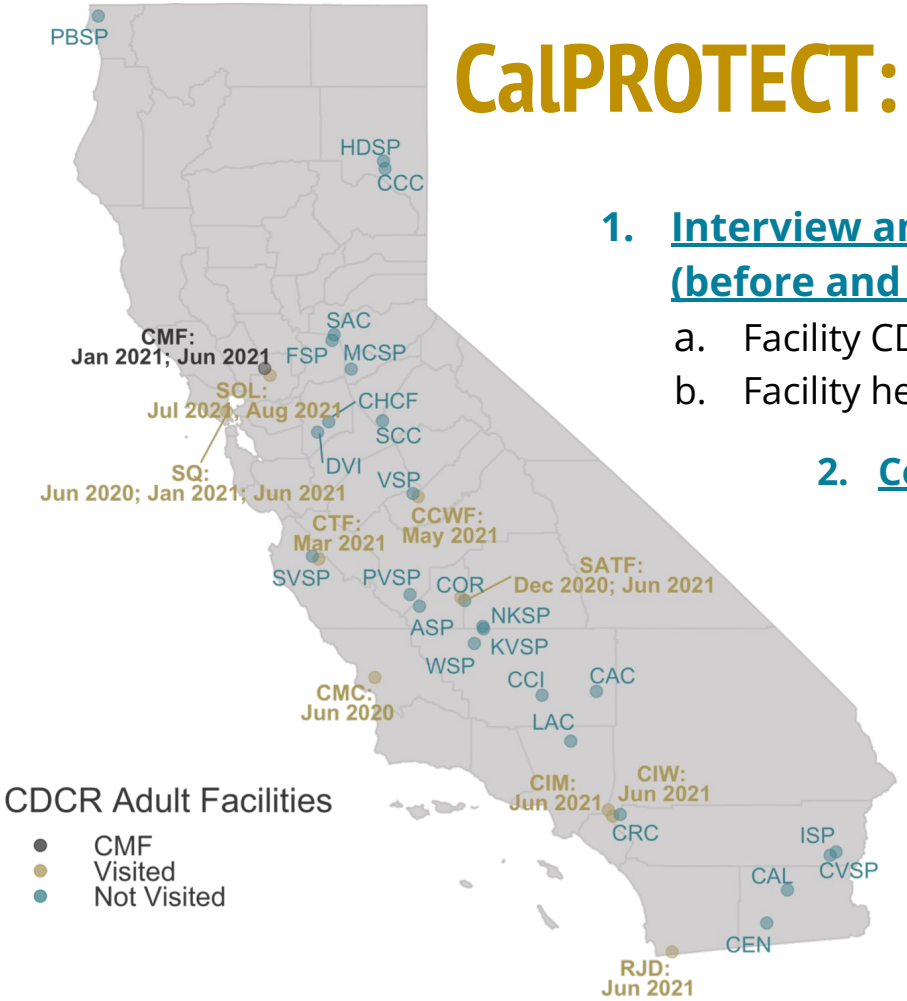
CalPROTECT: Output

Our work will culminate in an end-of-year report that will:

- Draw upon qualitative data, environmental assessments, policies, and CDCR-wide administrative data
- Document our findings and provide recommendations to inform future decision making
- Be comprised of multiple, interrelated mini-reports presented together
  - each section is self-contained and can be read as part of the whole

CalPROTECT: Methodology CMF Visit



1. **Interview and have conversation with key stakeholders (before and during visits):**
   a. Facility CDCR/CCHCS leadership
   b. Facility healthcare, custody, plant/engineering staff

2. **Conduct onsite data collection**
   a. Focus groups and conversations with residents and staff
   b. Spatial observation of facilities
   c. Indoor air quality assessments
   d. Collect site-specific announcements and policies

3. **Share information**
   a. Arrival and departure debriefs with leadership

CalPROTECT observations and recommendations span several topics

1. **Content that our team is working on CDCR-wide and across institutions:**
   - **Epidemiology and transmission dynamics:** in each facility/housing type (EPI curves)
   - **Screening and testing:** evolution of testing protocols; testing turnaround time; and screening/testing recommendations
   - **Behavioral science:** experiences of staff and residents, challenges and opportunities
   - **Environmental assessment:** structures and ventilation, vulnerabilities and recommendations
   - **Movement and isolation/quarantine:** Focus on movement between facilities
   - **Vaccination:** trends and demographics at the institution & compared to the system
   - **Pandemic preparedness**: rapid response plan and communication

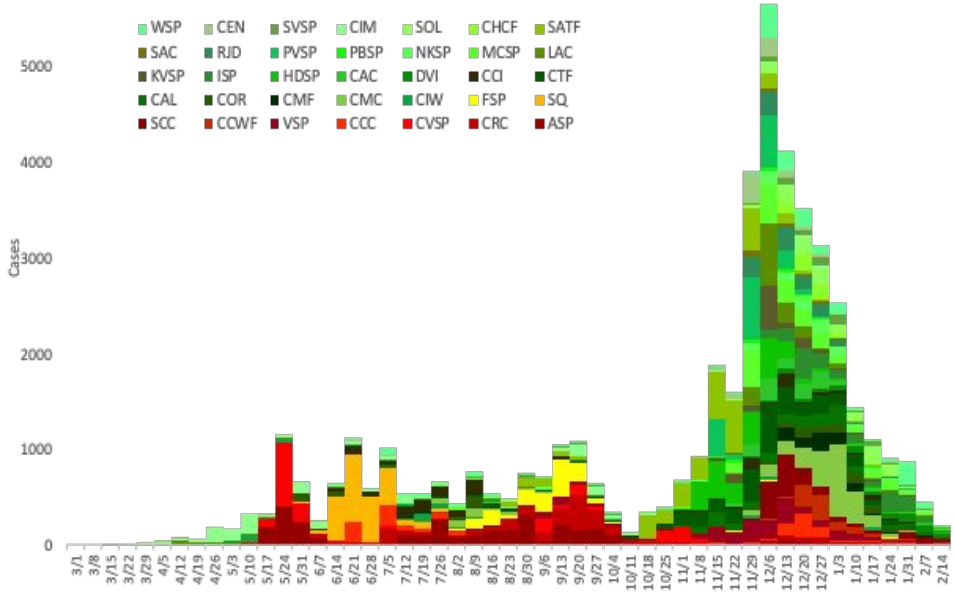
2. **Today, we will review the content highlighted above for CMF:** one purpose of the discussion is to correct errors and misperceptions that we may have from the site visits to improve the accuracy of the final report

2. Epidemiology and Transmission Dynamics, Testing Turnaround Time and Recommendations

Aerosol transmission has caused outbreaks in dorms and cells through different seasons

This graph displays the frequency of COVID-19 cases (N = 48,984) by institution and housing type

- COVID-19 outbreaks in summer 2020 predominantly occurred in institutions that were majority **dorms, pods and barred cells**.
- Beginning in mid-October, large outbreaks also occurred in institutions that were **majority cells with solid walls and doors.**



Note: Figure by Dr. Heidi Bauer and Dr. Justine Hutchinson from CCHCS (February 2021)

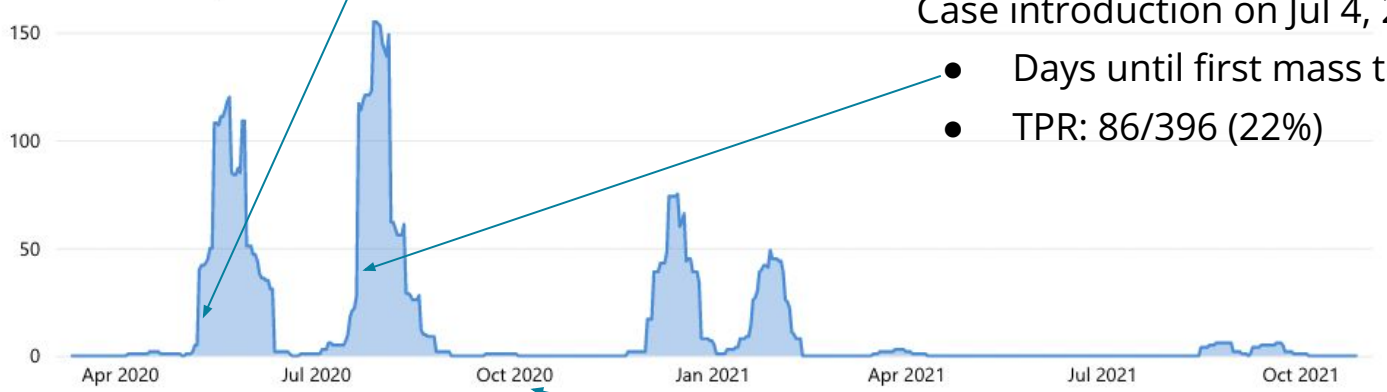
At many institutions, controlling outbreaks became increasingly difficult when there was a delay between case introduction and mass testing

Case introduction on May 2, 2020:

- Days until first mass testing: **6**
- TPR: 35/185 (19%)

Case introduction on Jul 4, 2020:

- Days until first mass testing: **17**
- TPR: 86/396 (22%)



Case introduction on Sep 18, 2020:

- Days until first mass testing: **2**
- TPR: 1/162 (0.6%)

Mass testing is >100 tests done in 1 day
TPR = test positivity rate

Source: CDCR Population Tracking, CIW

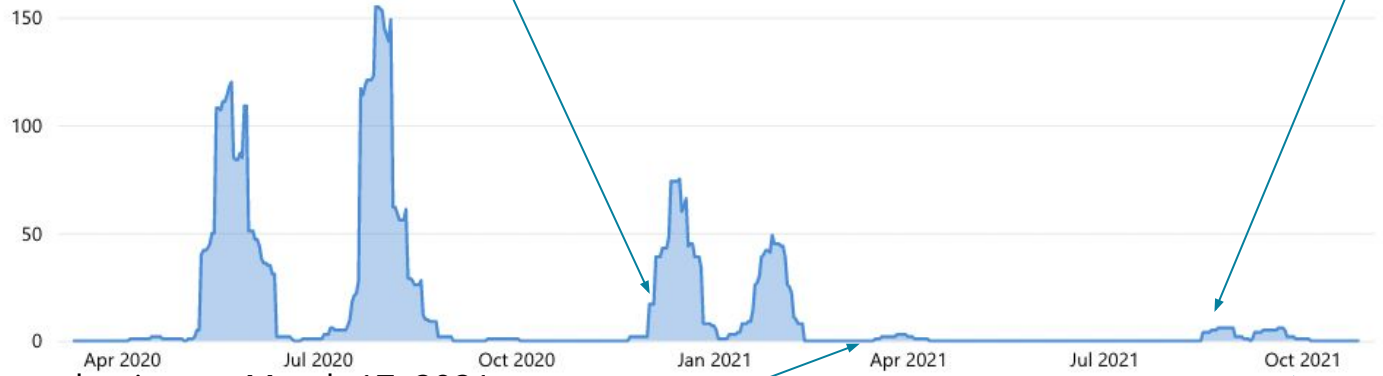
At many institutions, controlling outbreaks became increasingly difficult when there was a delay between case introduction and mass testing

Case introduction on Nov 23, 2020:

- Days until first mass testing: **2**
- TPR: 0/307 (0%)

Case introduction on Aug 16, 2021:

- Days until first mass testing: **3**
- TPR: 0/320 (0%)



Case introduction on March 17, 2021:

- Days until first mass testing: **Same day**
- TPR: 1/291 (0.3%)

Case introduction on September 8, 2021:

- Days until first mass testing: **Same day**
- TPR: 1/290 (0.3%)

Mass testing is >100 tests done in 1 day

Source: CDCR Population Tracking, CIW

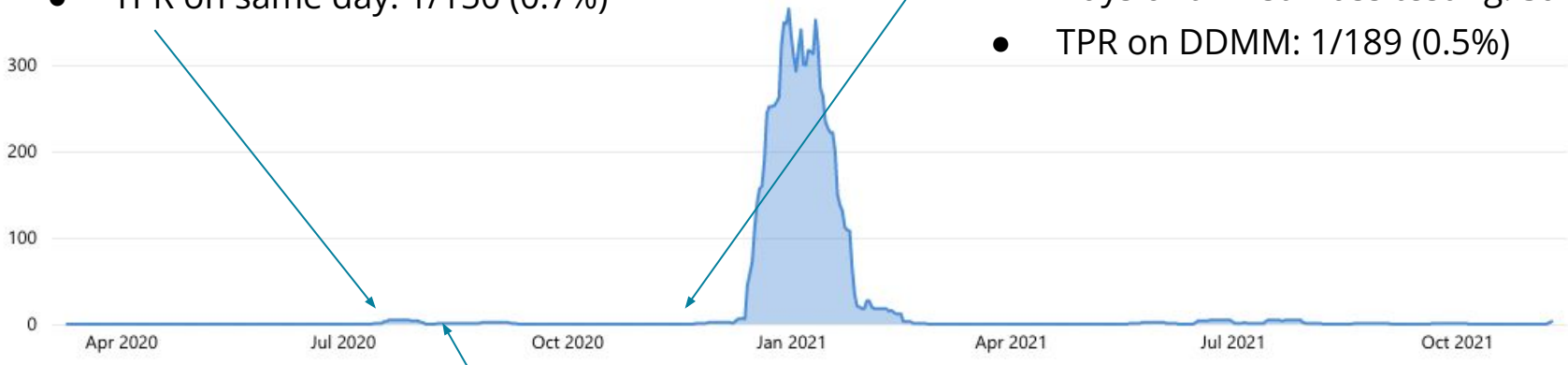
Controlling outbreaks becomes increasingly difficult when there is a delay between case introduction and mass testing

Date first case tested: 14 Jul 2020

- Days until first mass testing: Same day
- TPR on same day: 1/150 (0.7%)

Date first case tested: 23 Nov 2020

- Days until first mass testing: Same day
- TPR on DDMM: 1/189 (0.5%)



Date first case tested: 9 Aug 2020

- Days until first mass testing: 2
- TPR on 11 Aug 2020: 0/113 (0%)

At a minimum, mass testing defined as >100 tests done in 1 day at the institution
TPR = test positivity rate

Source: CDCR Population Tracking, CMF

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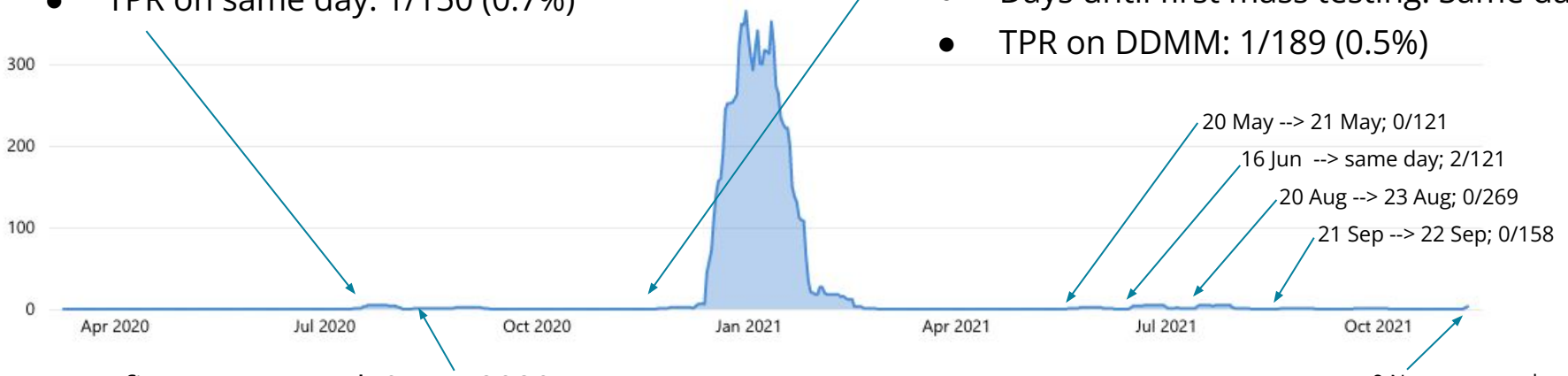

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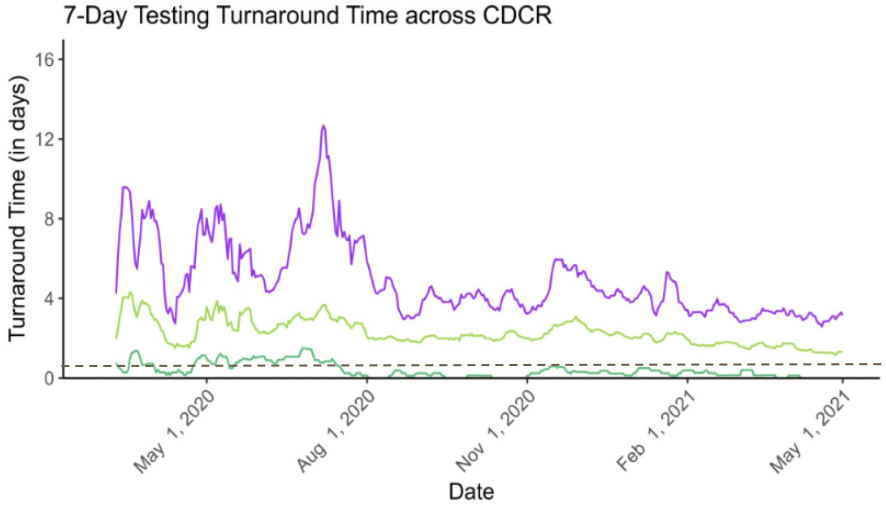
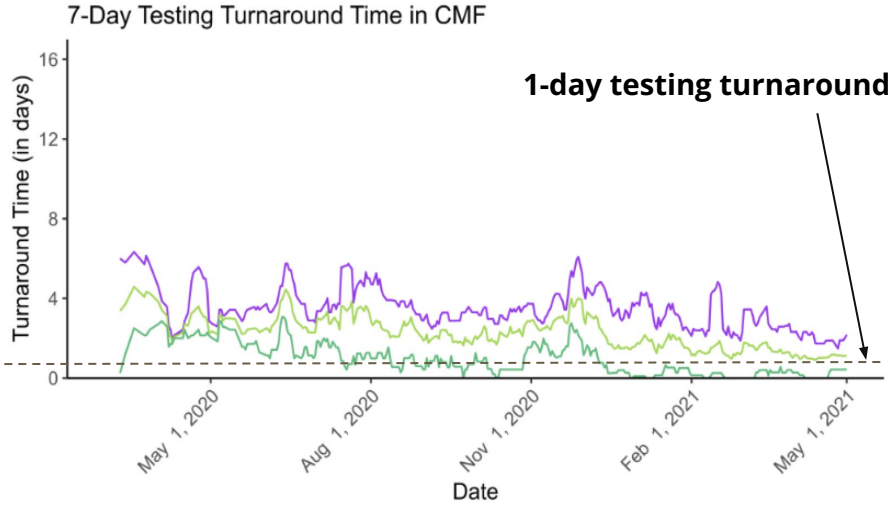
TPR = test positivity rate

Source: CDCR Population Tracking, CMF

CDCR & CMF testing turnaround (TAT)

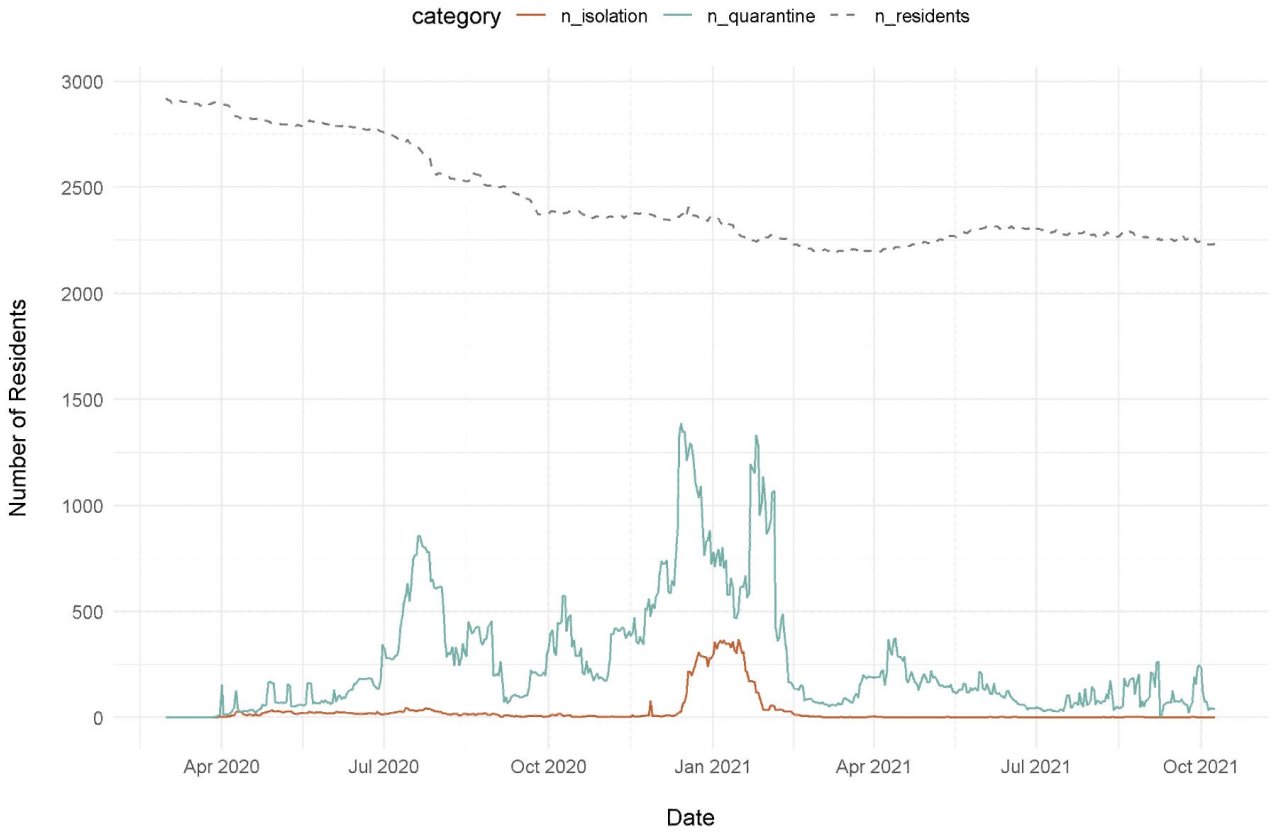




95th Percentile 7-day moving average
Mean 7-day moving average
5th Percentile 7-day moving average

- Summer 2020 exposed the challenge of making quarantine and isolation decisions with extended testing turnaround times for most facilities at CDCR
- CMF experienced fairly stable TAT averaging ~4 days (and was as high as 6)
- We found that the number of tests per day did not impact TAT

CMF Quarantine and Isolation

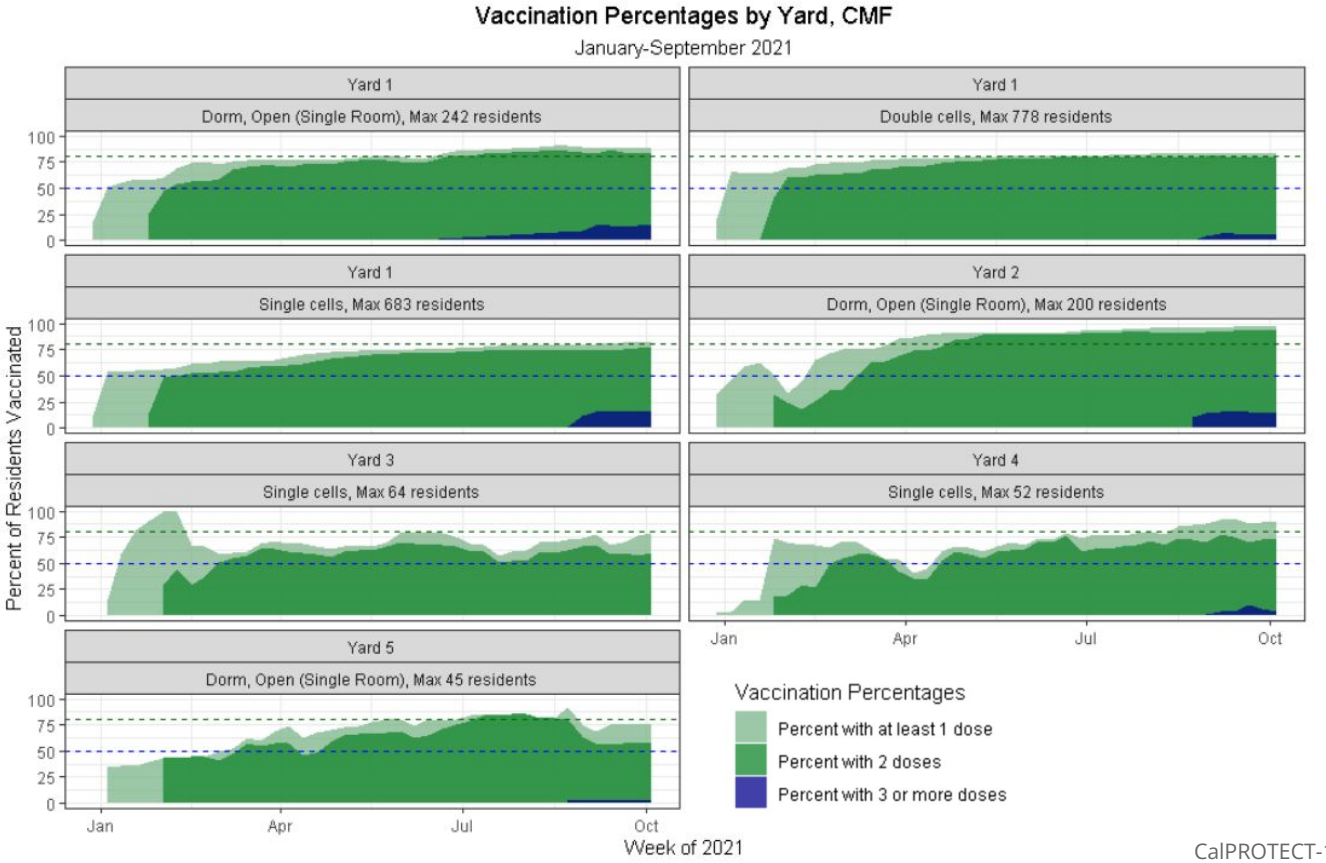


Yards varied in vaccination rates across CMF, with some still ~60% in September

As of Dec 7, 2021, 87% of 1,996 residents and 76% of 2,841 staff have been fully vaccinated at CMF, per CDCR definitions

80% partially or fully vaccinated

50% partially or fully vaccinated



Note: Yards and buildings are anonymized in CDCR data; as such, the number of residents and room type is given instead of yard names.

Findings and Recommendations

1. **Outbreaks in solid-walled cells last fall/winter highlight concern for the risk of aerosol spread**
2. **Differential vaccination rates across buildings** can help identify buildings that would benefit most from additional efforts to decrease the risk of transmission.
3. **Deployment of screening (and wastewater surveillance) to trigger mass testing** is an opportunity for rapid detection of cases and appropriate contact tracing, quarantine, and isolation before rising cases overrun an institution.
    a. However, challenges with overcrowding and not having enough safe quarantine and isolation space for residents with different personal and medical needs became very challenging in the Dec-Jan outbreak.

3. Behavioral Science Data Collection:

Staff and Resident Experiences of COVID-19

The approach: Site Visits

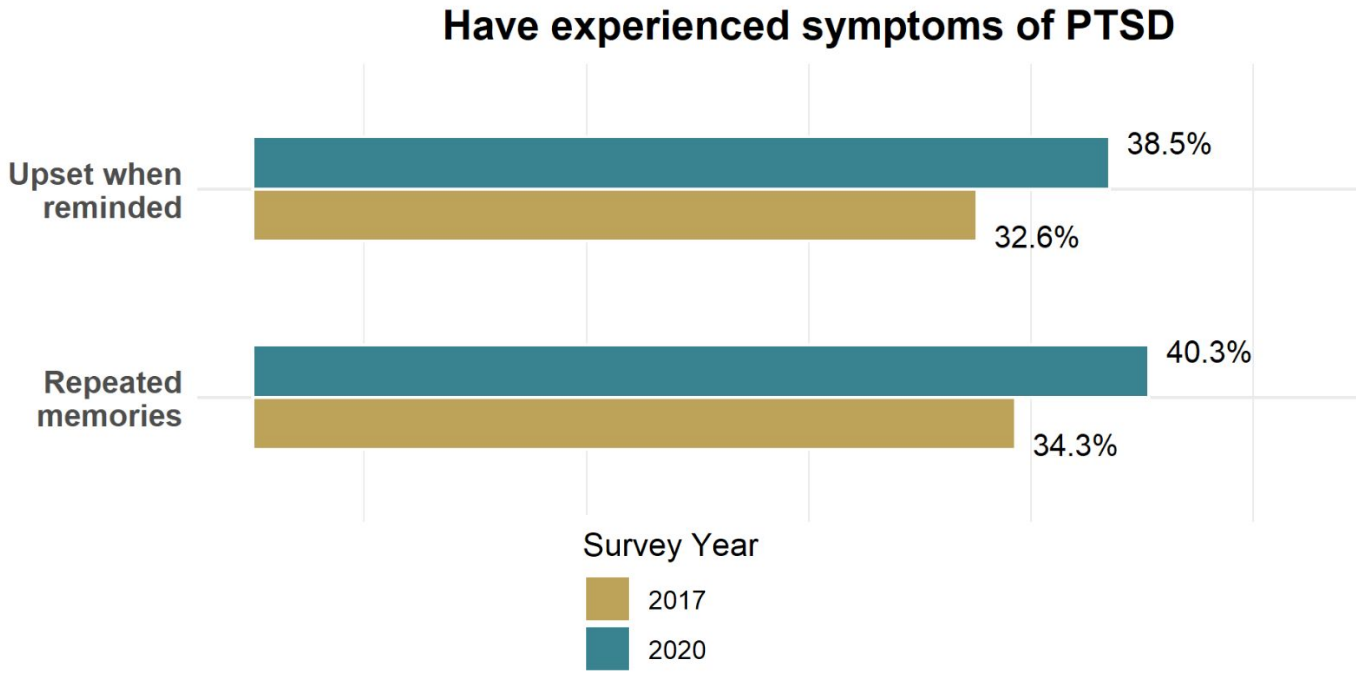
- **What we did:** We conducted conversations with residents, staff and leadership across the system on medical, nursing, mental health and correctional teams.
  - **Custody staff** (N=26)
  - **Medical/Mental health staff** (N = 60)
  - **Incarcerated people** (N=92)

- **Why we did it:** To understand the experience of COVID-19 among those who live or work at CDCR institutions, in order to learn more about what is needed to recover from the pandemic and how to respond to future emergencies.

The approach: Custody Survey

- **What we did:** We implemented a population-wide email survey of custody staff.
  - **n=1,761** across all facilities, representative by race and gender
  - **n=8,334**; a subset of questions were repeated from the CCOS, a survey of custody staff conducted by The People Lab in May 2017.
- **Why we did it:** To gain broader insight into the experiences, needs, and attitudes of correctional staff related to the COVID-pandemic.

Survey Data: Staff mental health is worse during COVID-19

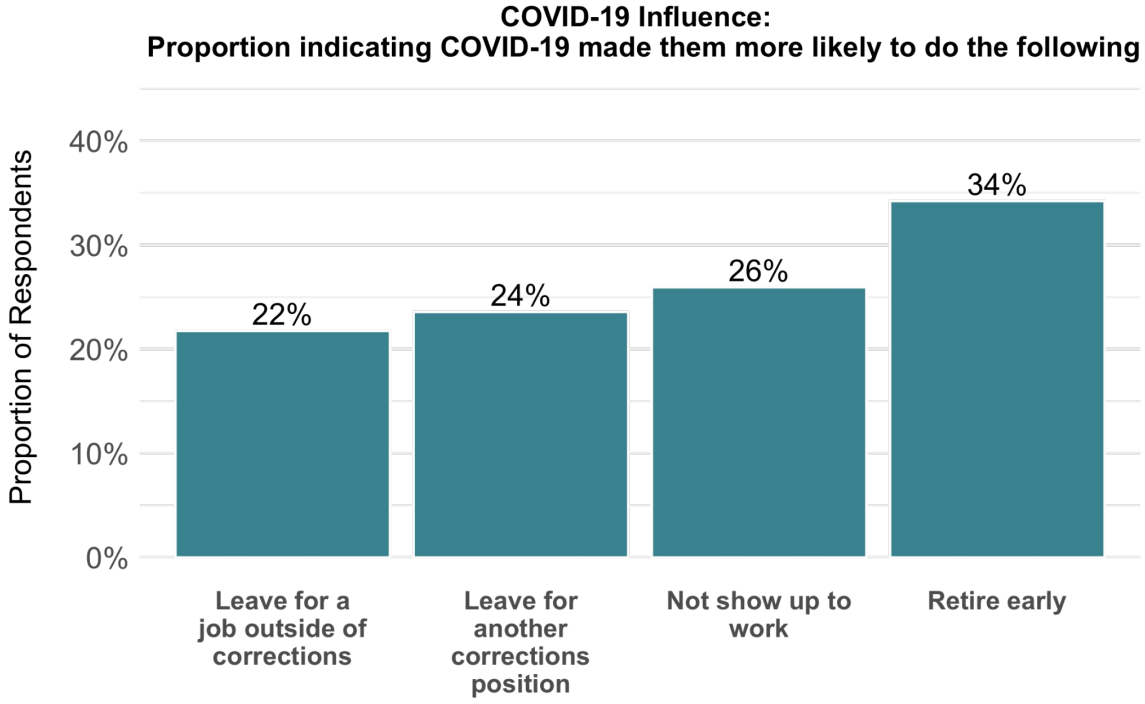


2017 Data are from the CCOS (n=8,334)

2020 Data are from the COVID-19 CO Survey (n=1,761)

Both surveys include custody staff across all facilities and respondents are broadly representative of the population by race and gender

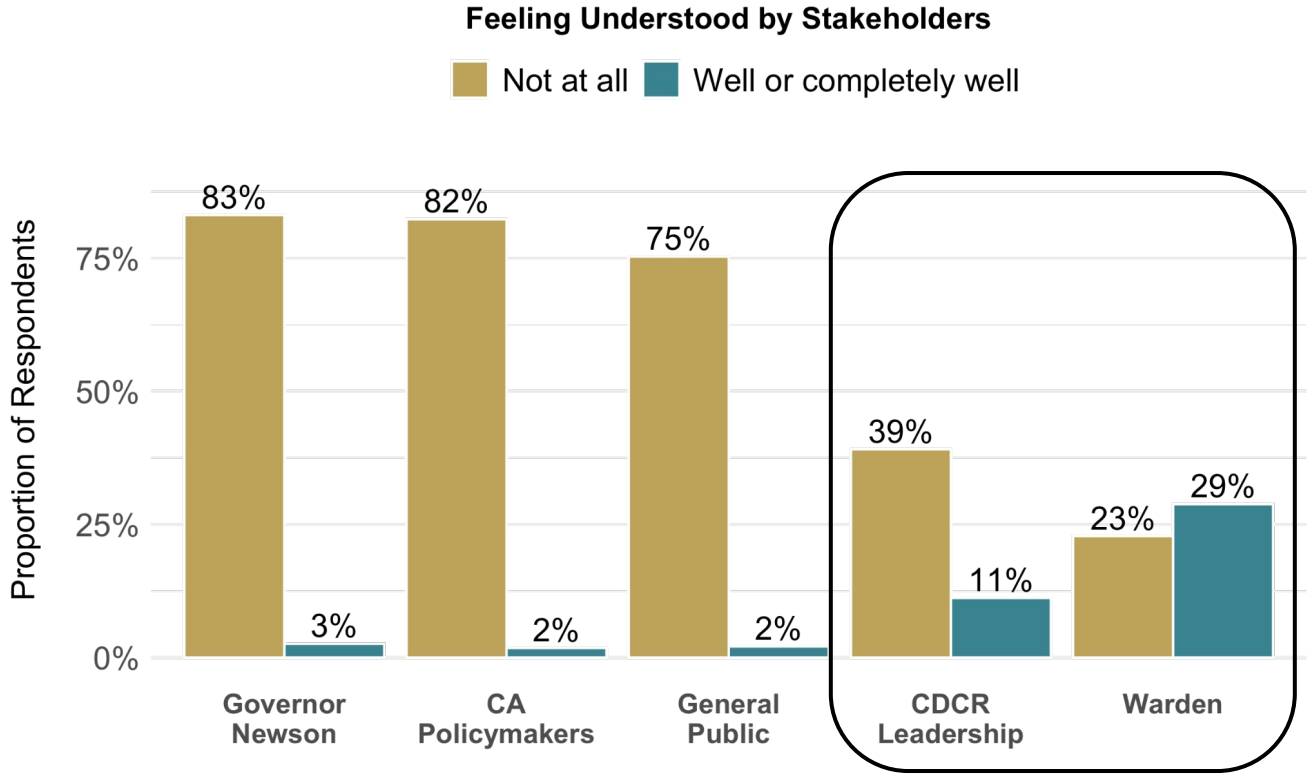
Survey Data: Threat of burnout and staff turnover due to COVID-19 is significant



COVID-19 data are based on survey responses (N=1,761) across all facilities, (representative by race and gender), May 2020

Survey Data: Staff report low levels of feeling understood

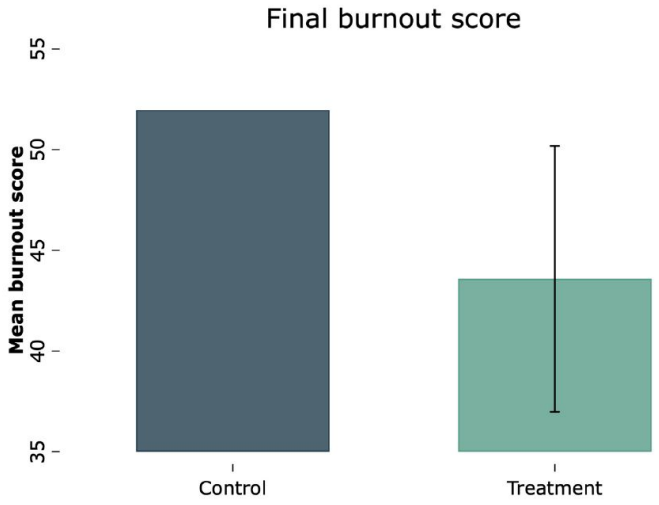
This presents a unique opportunity for wardens and other prison leadership to leverage feelings of being understood in order to improve wellbeing among staff

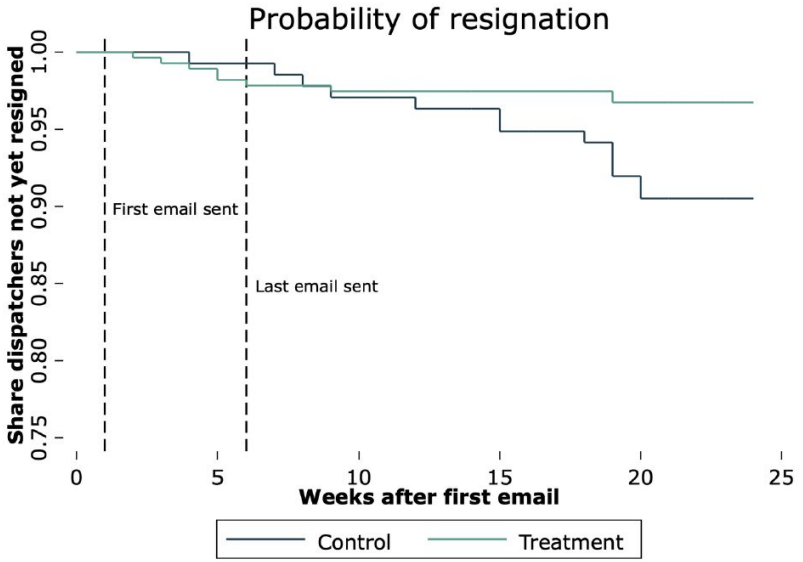


Opportunities for Building Strength

Staff voiced significant concerns about existing supports.

But low-cost interventions can help:





Opportunities for Building Strength

A critical moment to:

- **Continue empowering people** to understand “why” policies are being implemented and what is their intent

> ***“It felt like they were trying to get to herd immunity"***
>
> *- Resident at CMF*

Opportunities for Building Strength

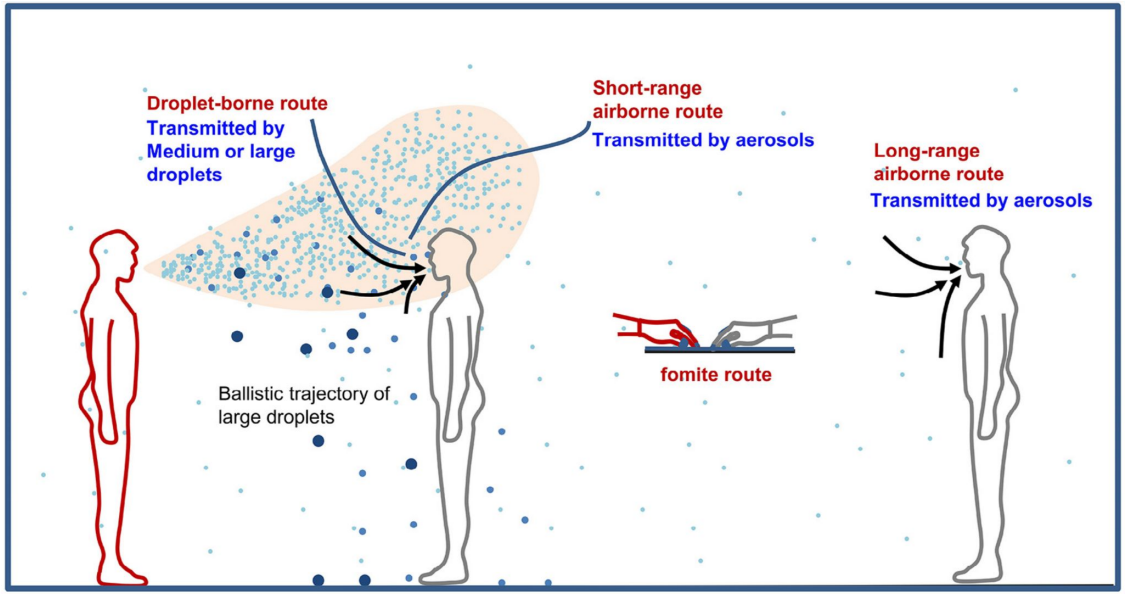
A critical moment to:

- **Reinforce culture of learning**, including from mistakes
  - Reassure staff that you know they faced impossible decisions under extreme uncertainty, and they had no choice but to find a(n imperfect) solution

> ***"Good communication [would look like] information from trusted sources on the institutional TV channel"*** *- Resident at CMF*

4A. Environmental Assessment: Background

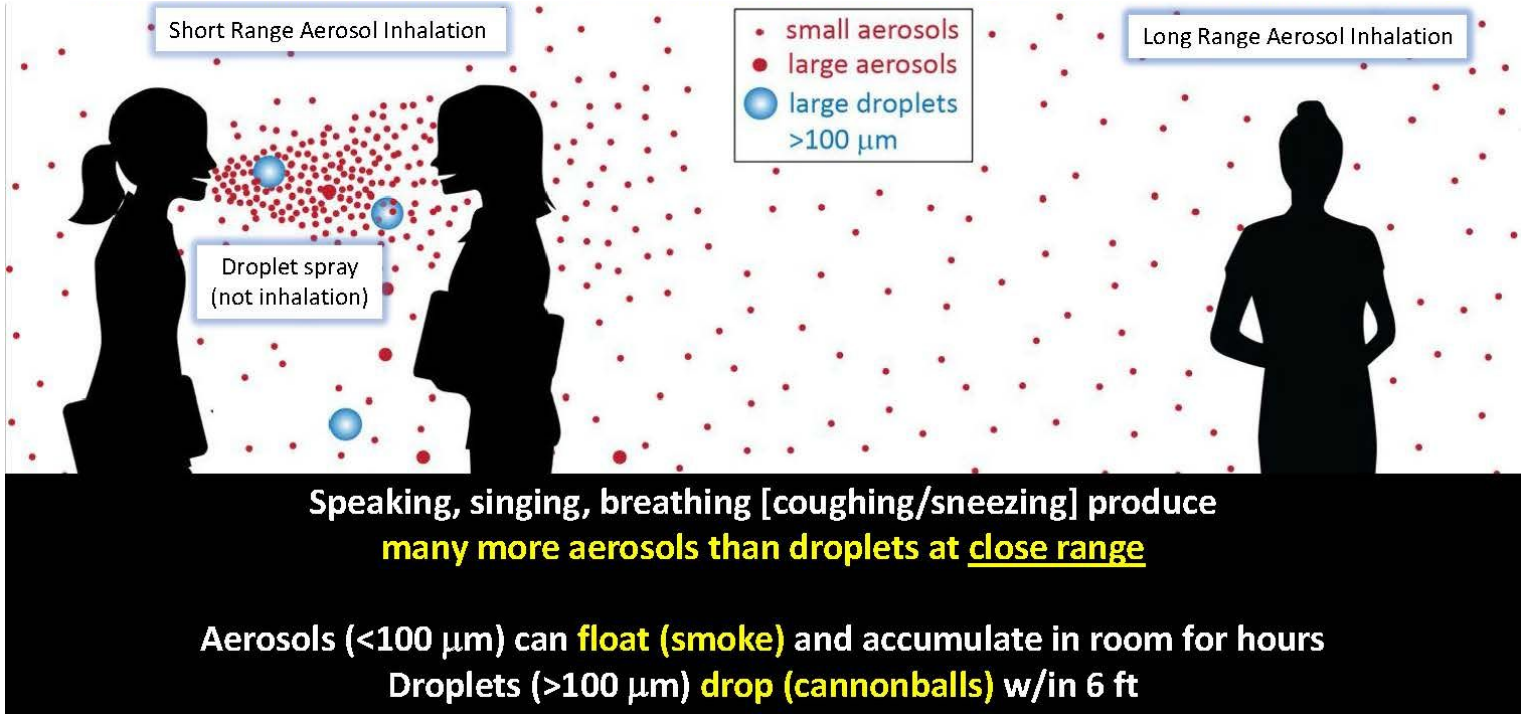
There is overwhelming evidence that SARS-CoV-2 is transmitted primarily through exhaled aerosol suspended in indoor air



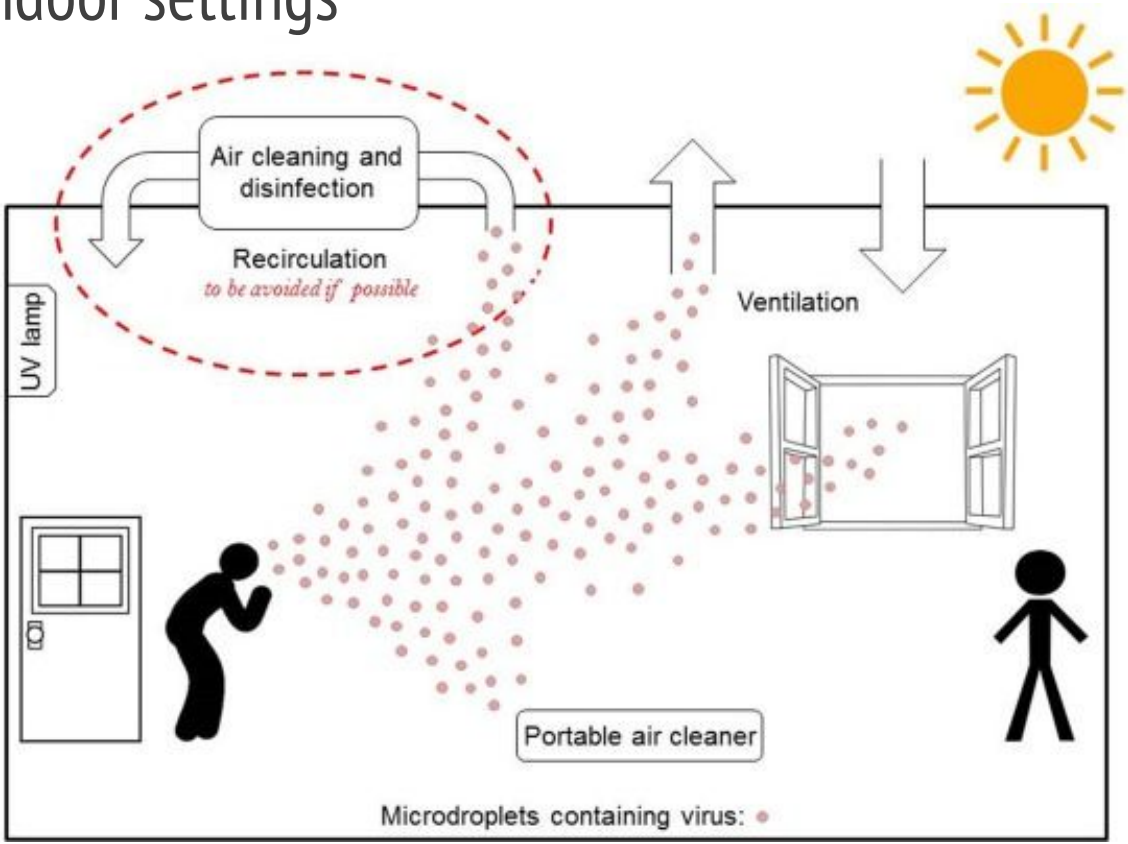
- Large droplets (>100 μm) : Fast deposition due to the domination of gravitational force
- Medium droplets between 5 and 100 μm
- Small droplets or droplet nuclei, or aerosols (< 5 μm): Responsible for airborne transmission

Sources:
Prather, K. A., Marr, L. C., Schooley, R. T., McDiarmid, M. A., Wilson, M. E., and Milton, D. K. (2020). Airborne transmission of sars-cov-2. Science, 370(6514):303–304.
Morawska, L. and Cao, J. (2020). Airborne transmission of SARS-CoV-2: The world should face the reality. Environment International, 139:105730.
Morawska, L. and Milton, D. K. (2020). It is time to address airborne transmission of COVID-19. Clinical Infectious Diseases, 71:2311–2313.
Jayaweera, M., Perera, H., Gunawardana, B., and Manatunge, J. (2020). Transmission of COVID-19 virus by droplets and aerosols. Environ Res., 188(109819).
Zhang, J., Litvinova, M., Liang, Y., Wang, Y., Wang, W., Zhao, S., Wu, Q., Merler, S., Viboud, C., Vespignani, A., et al. (2020a). Changes in contact patterns shape the dynamics of the COVID-19 outbreak in china. Science, 368:1481–1486.

Indoor transmission through aerosols occurs when people are breathing, speaking, coughing/sneezing



Why is ventilation important? It controls the concentration of infected aerosols in indoor settings

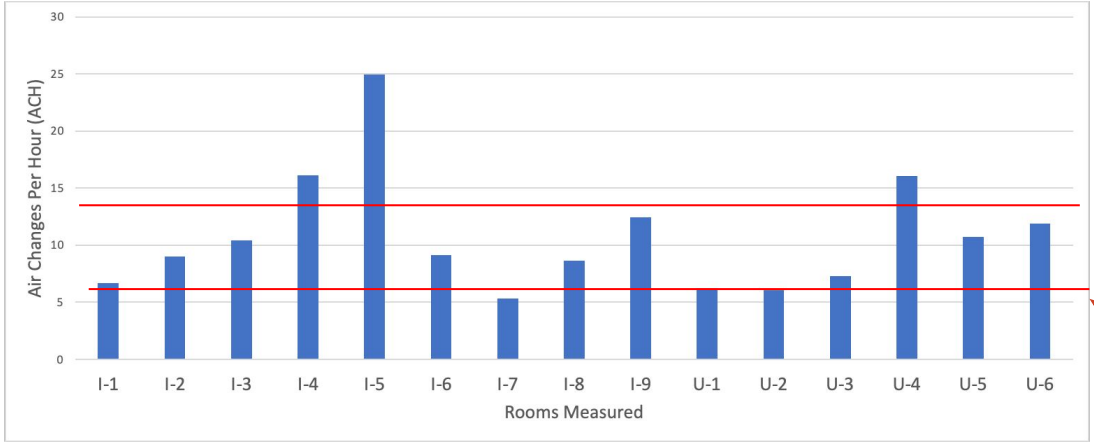


4B. Environmental Assessment:

What are we finding at CMF?

Even in our small sample at CMF, air exchange rates measured fell below infection control standards.

Like hospitals, CDCR facilities need to control infection.



*Room index does not correlate with actual room ID for privacy reasons.

20% of rooms sampled at or below recommended air exchange rate standards

Recommendations for medical centers/quarantine facilities:

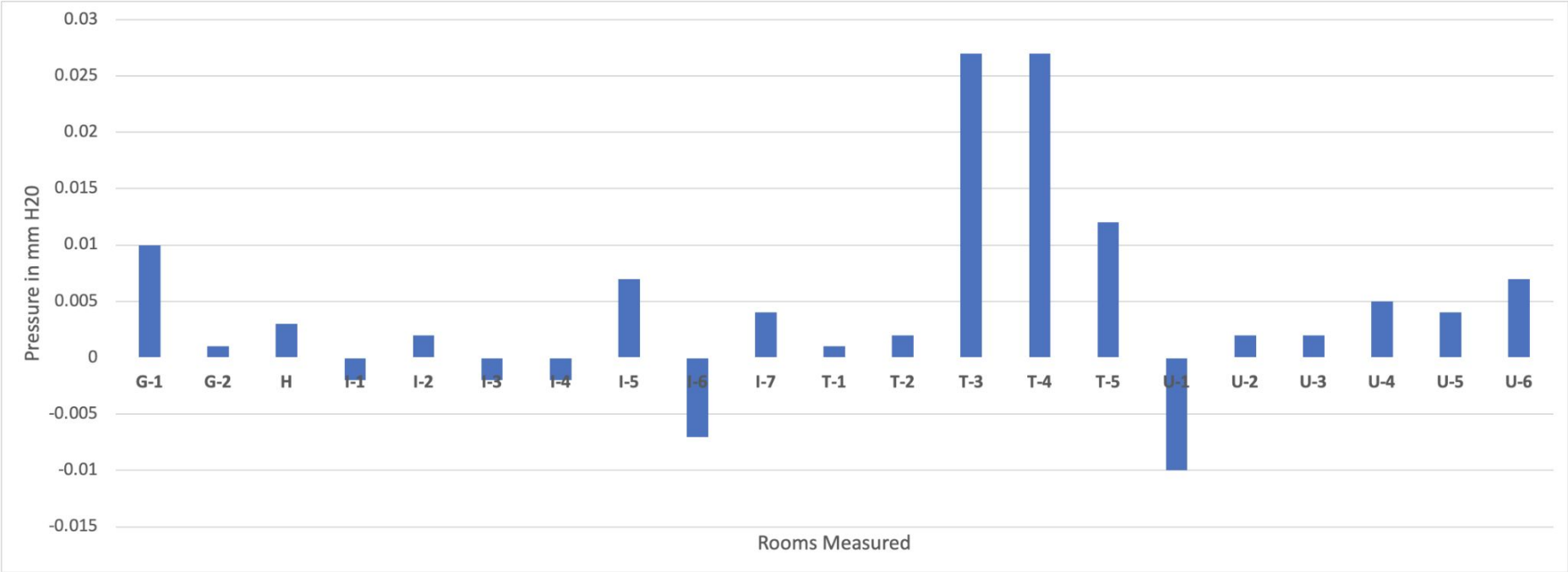
ACH 12 + Negative Pressure: recommended for protective environment rooms/ airborne isolation by *WHO, ASHRAE, OSHA*

ACH 6: recommended for General Hospital wards and classrooms by *WHO, ASHRAE*

Dorms present a serious transmission risk for CMF

Avg. ACH estimated in C dorm: 1.5

Inconsistent static pressure measurements indicate potential for virus to move from isolated rooms to common areas



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4C. Environmental Assessment:

What might you do at this juncture?

Reduce indoor concentrations of SARS-CoV-2 with Ventilation

1. **Ensure that all ventilation systems are functioning** at height of their capacity and correctly
   - At a minimum, functioning exhausts throughout the system should be exhausting to the outdoors
   - Clean all vents
2. **Continue ventilating the space while occupants are outside** at yard to clear additional Sars-CoV-2 aerosols from the rooms
3. **Open windows and doors** when and wherever possible

Reduce indoor concentrations of SARS-CoV-2 with filtration

Use high grade filters to "scrub" air and reduce viral concentrations in congregate areas

MERV 13+ filters should be installed in HVAC systems where recirculation is necessary

Supplemental air cleaners can be used to pull infectious agents out of the air before they infect people

➔ For a CADR (clean air delivery rate) of 250, place one in every 250 square feet

MERV-13

Corsi-Rosenthal Box - box fan + MERV-13 filters

Reduce indoor concentrations through Source Reduction

1. **Reducing occupancy** to reduce the density of infectious emissions in an indoor space
2. **Masking indoors** to reduce the emissions from individual sources
3. **Moving all high respiration activities** (e.g. exercising) **to outdoors** reduces the rate of emissions from individual sources.
    - Yard time also allows aerosol levels to fall indoors
4. **Vaccinating** reduces the emissions of virus in a room

Critical opportunity to empower and educate your facilities staff to "own" their ventilation system's performance

These quotes suggest opportunities for intervention

"I clean the filters every quarter. The metal mesh filters."

"I never thought about it like that. The difference in how Covid builds up inside versus outside"

"Using a filter with a virus is like expecting a chain linked fence to block a stone thrown."

There exists a tremendous need for (and interest in) continuing education and for being part of the emergency response teams at each facility

Additional time sensitive opportunities related to environmental assessments

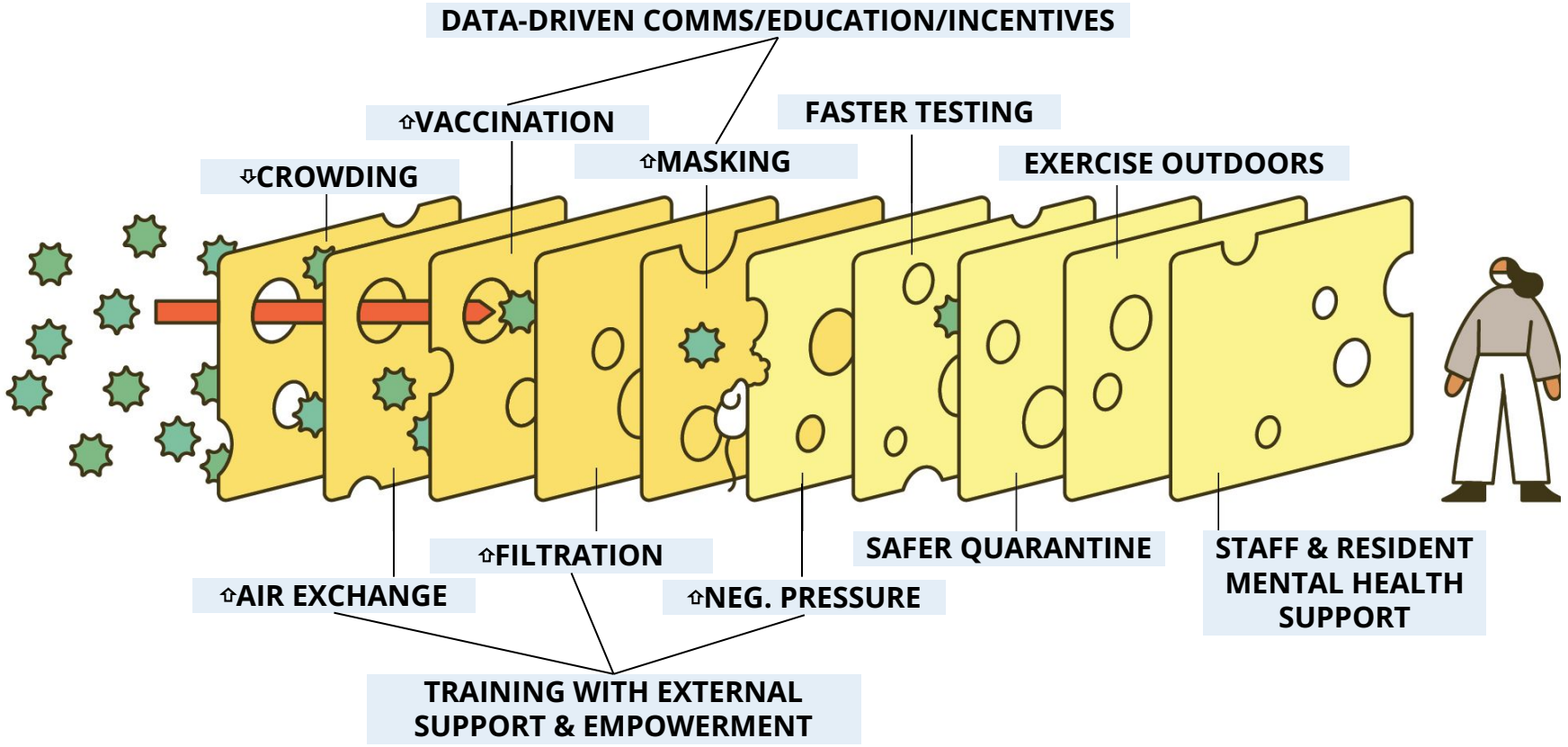
1. **Develop a strict protocol for buildings in quarantine and regular and frequent checks** as these units have the most immediate need for optimized and high functioning systems

2. **Contract with a licensed Test and Balance Engineer (TBE)** to ensure the proper functioning and balance of your ventilation systems

3. **Determine next most critical locations to focus resources**:
   - Consider using **CO2 concentrations to identify areas with poor ventilation** (although important to recognize that low readings do not necessarily equal low risk - but high readings definitely suggest high risk)

5. Final thoughts

No solution is sufficient alone



Source: Adapted from New York Times and Ian M. Mackay (virologydownunder.com) and James T. Reason. Illustration by Rose Wong.

Other important areas we were not able to touch on today:

- **Epidemiology and transmission dynamics:** in each facility/housing type (EPI curves)
- **Screening and testing:** evolution of testing protocols; testing turnaround time; and screening/testing recommendations
- **Behavioral science:** experiences of staff and residents, challenges and opportunities
- **Environmental assessment:** structures and ventilation, vulnerabilities and recommendations
- **Movement and isolation/quarantine:** Focus on movement between facilities
- **Vaccination:** trends and demographics at the institution & compared to the system
- **Pandemic preparedness**: rapid response plan and communication

Thank you for welcoming our team into CMF and allowing us to learn from your experiences.

The Wardens, Associate Wardens, Leadership, Custody, CEOs, CMEs, CNEs, medical leadership and staff, Plant Managers, Chief Engineers, Inmate Councils, and other staff and residents at SQ, CMC, SATF, CMF, CTF, CCWF, RJD, CIM, CIW, SOL.

In particular at CMF, we thank:

CEO Traci Patterson, Warden Daniel Cueva, (Former) CEO(A) Dr. William Kushner, (Former) CEO Lori Austin, CME Dr. Michele DiTomas, Henry (Hank) Blank, Martin Morisson, members of the Executive IAC,

and all others involved in coordinating the visit, welcoming us, and providing information for the report.

Receiver Mr. Clark Kelso,

Dr. Joseph Bick, Dr. Heidi Bauer,

Dr. Justine Hutchinson, Mr. John Dovey,

Dr. David Leidner, Mr. Dean Borg,

Ms. Sarah Bronstein, Dr. Ilana Garcia-Grossman,

Ms. Liz Gransee