

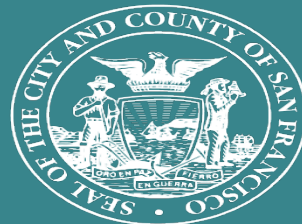


**ZUCKERBERG
SAN FRANCISCO GENERAL**
Hospital and Trauma Center

Critical Care Committee Report October 2020

Antonio Gomez, MD - Director, Critical Care Services, ZSFG

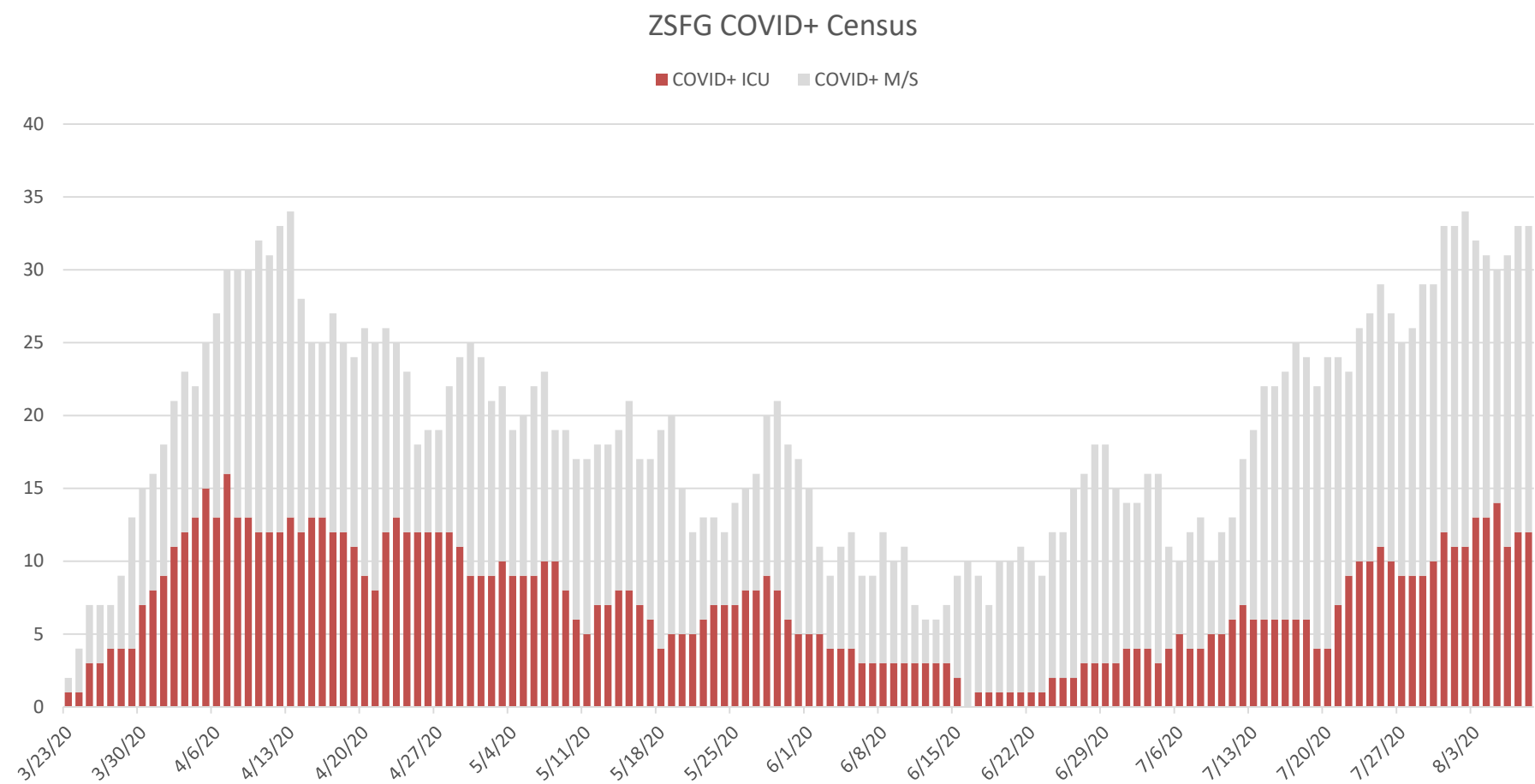
Slides courtesy of Joy Capacillo, RN – ICU QI Coordinator



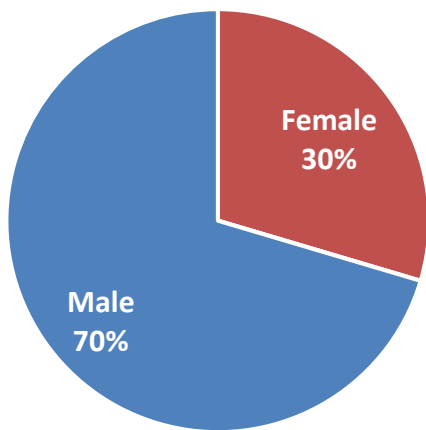
**San Francisco Department
of Public Health**

ZSFG Inpatient COVID+ Daily Census

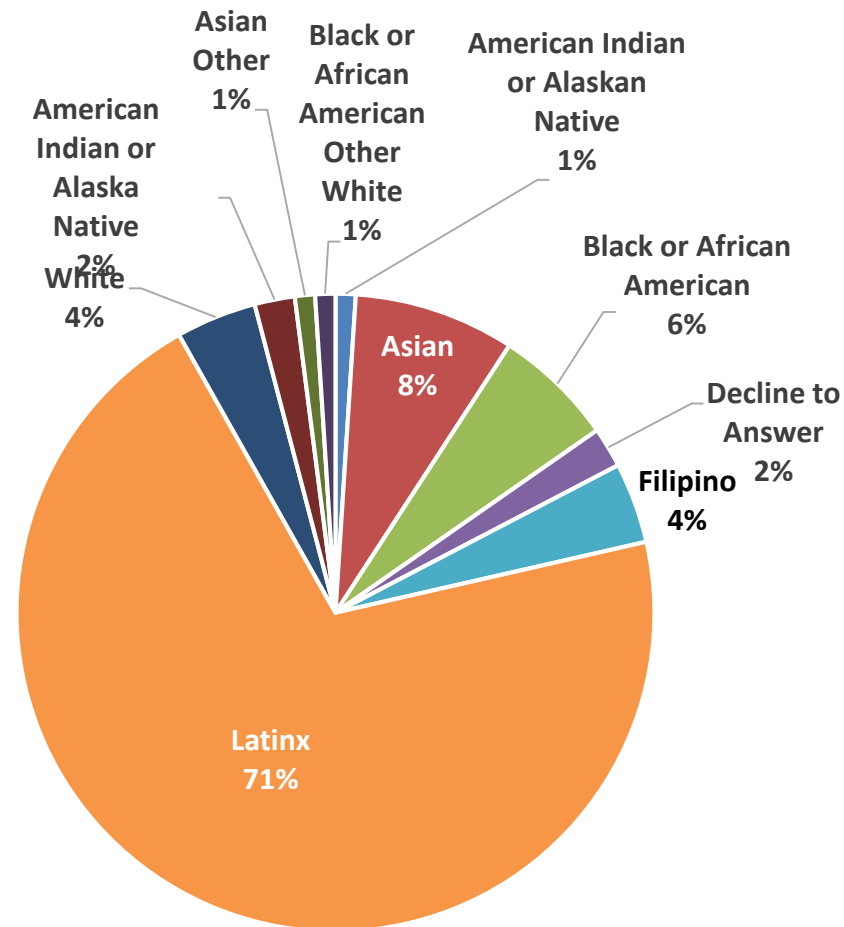
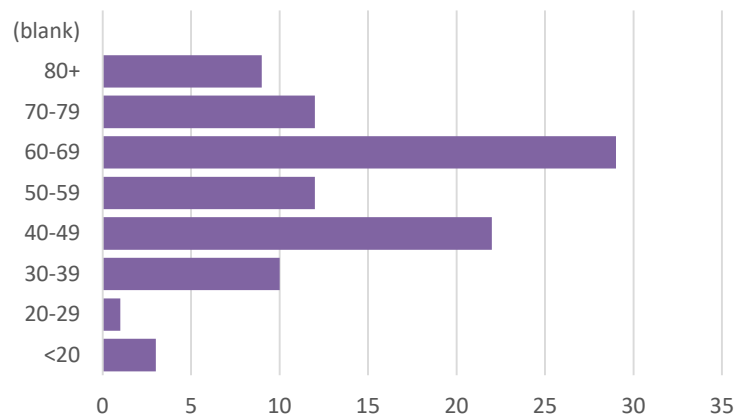
* Data obtained by reconciling information from HICS daily reports, ICU census logs, and run chart by G. Ortiz.



ICU COVID-19 Cases: March 1st – August 18th

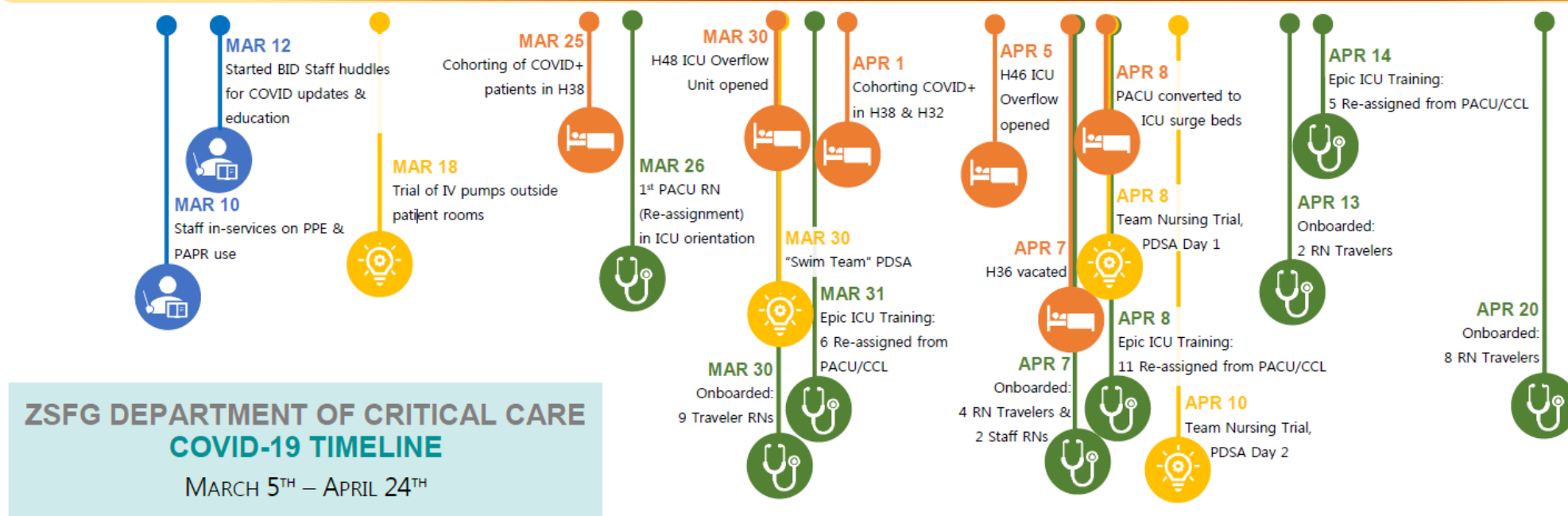
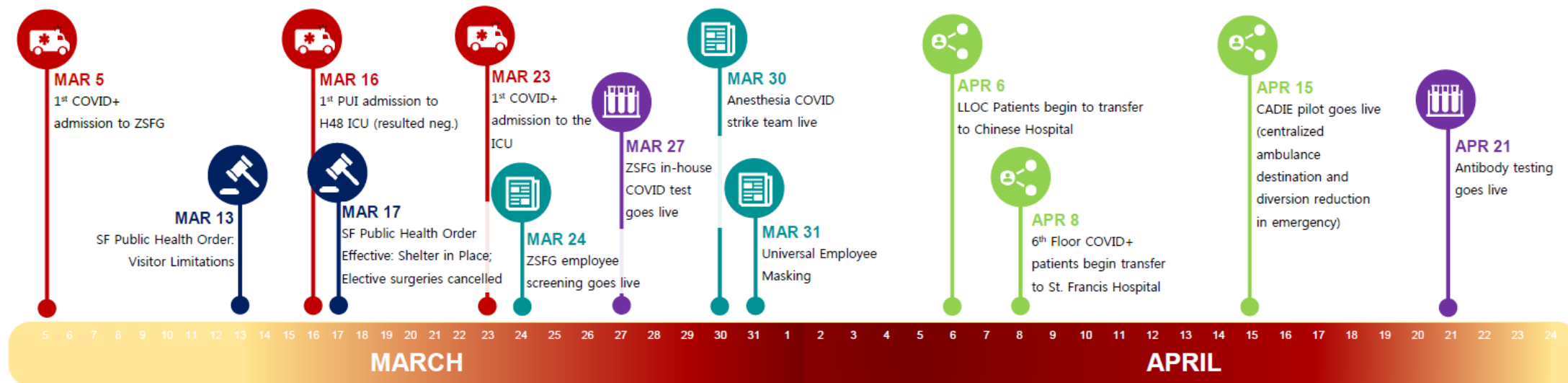


Age Distribution



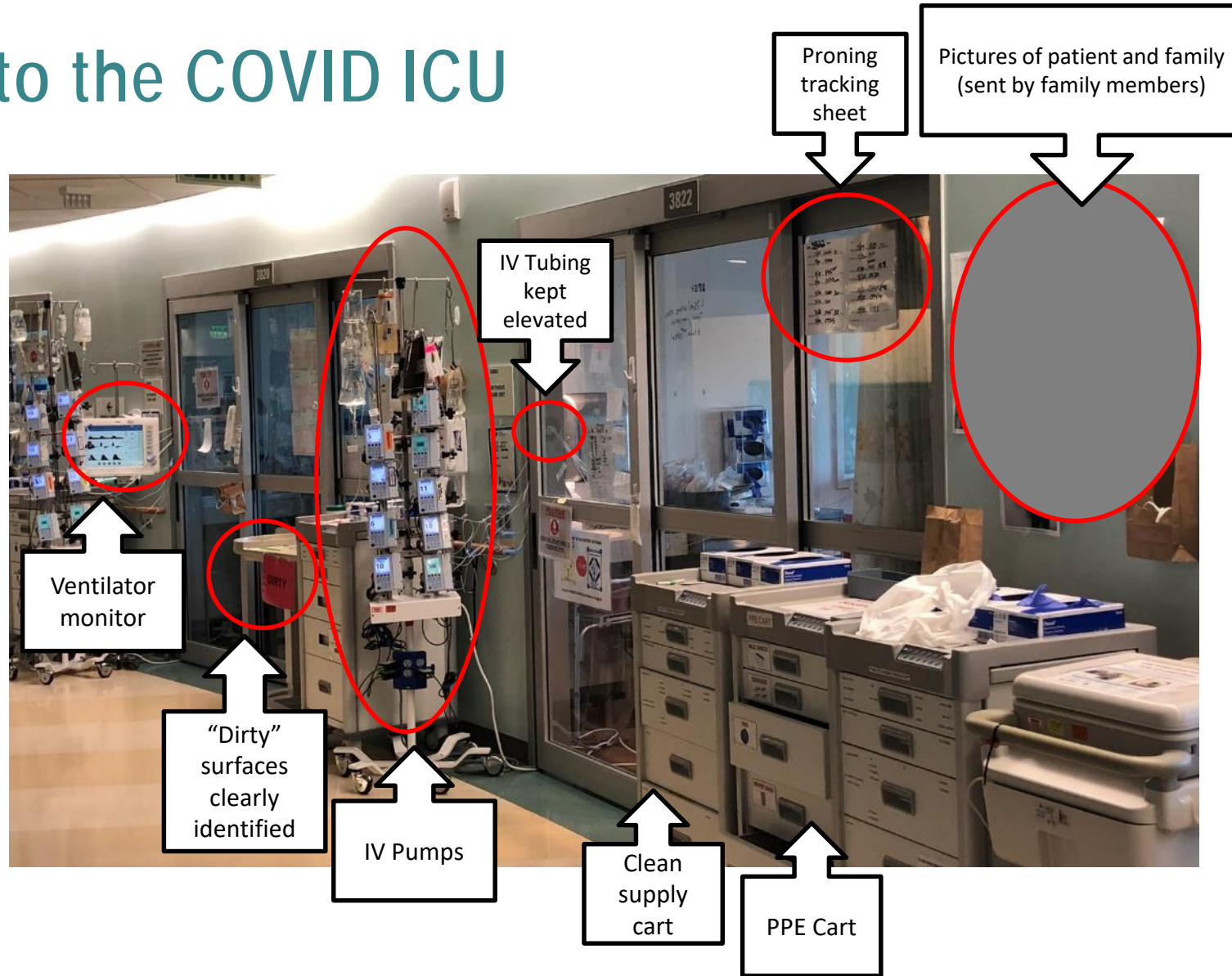
What we did at ZSFG

- Practical adaptations/innovations to limit spread of the virus and preserve PPE
- Evidence-based ARDS Management
- Daily Multidisciplinary meetings with ID and Infection Control Colleagues
- No therapies unsupported by high quality evidence
- Commitment to participation in clinical trials
- Major practice changes were rigorously vetted and debated by faculty prior to widespread implementation
- Increased RN, RT, and MD staffing



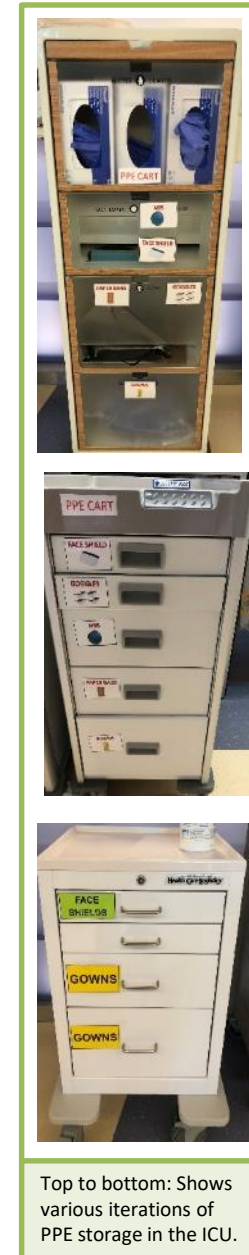
ZSFG DEPARTMENT OF CRITICAL CARE
COVID-19 TIMELINE
 MARCH 5TH – APRIL 24TH

Welcome to the COVID ICU



PPE: Shortage, Storage & Distribution

| Cause / Barrier | Action | Who | When / Status |
|-----------------|---|---------|-----------------------------------|
| Materials | National PPE shortage: <ul style="list-style-type: none"> - Developed methodology to track PPE usage (“burn”) rates to help calculate forecasted needs - Collaborated with staff, ICU leadership, and IC to develop and communicate PPE conservation strategies | Anna K. | March-May, Completed & ongoing |
| Methods | Lack of standard workflow to obtain and distribute PPE: <ul style="list-style-type: none"> - Developed PPE distribution plan in coordination with CPD - PDSA “PPE Rounders” in coordination with CPD and assistance of redeployed ZSFG staff | Anna K. | March, ongoing |
| Materials | Staff unable to access/obtain PPE efficiently (Isolation carts not available from CPD) <ul style="list-style-type: none"> - Acquired and deployed standardized PPE storage units/carts | Anna K. | March – June, Completed & ongoing |



Limiting Spread & PPE Conservation

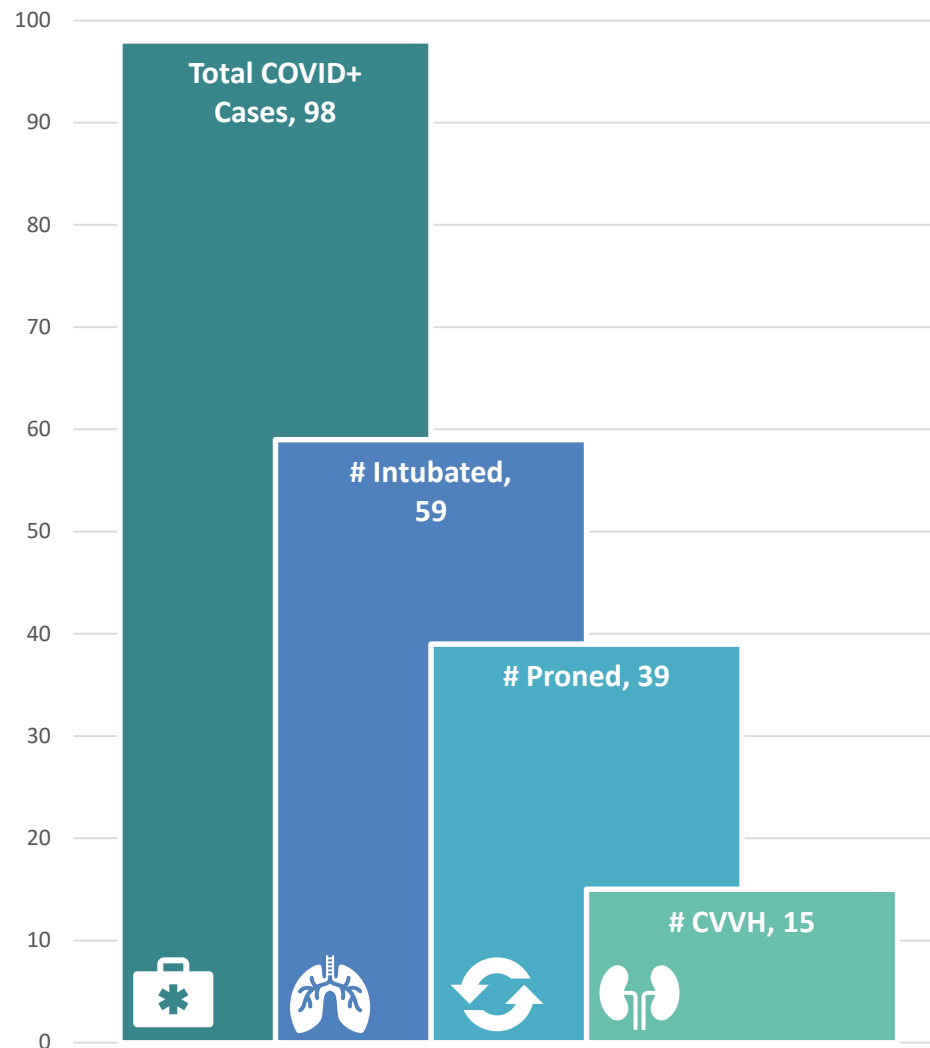
Swim Teams



IV Poles outside room



ICU COVID-19 Cases: March 1st – August 18th



| ICU – Level Therapies | Patients – no./total no (%) |
|--------------------------------------|-----------------------------|
| Invasive mechanical ventilation | 59/98 (60.20%) |
| Prone positioning | 39/98 (39.80%) |
| Neuromuscular blockade | 43/98 (43.88%) |
| Inhaled pulmonary vasodilators | 21/98 (21.49%) |
| Vasopressors | 63/98 (64.29%) |
| Continuous Renal Replacement Therapy | 15/98 (15.31%) |

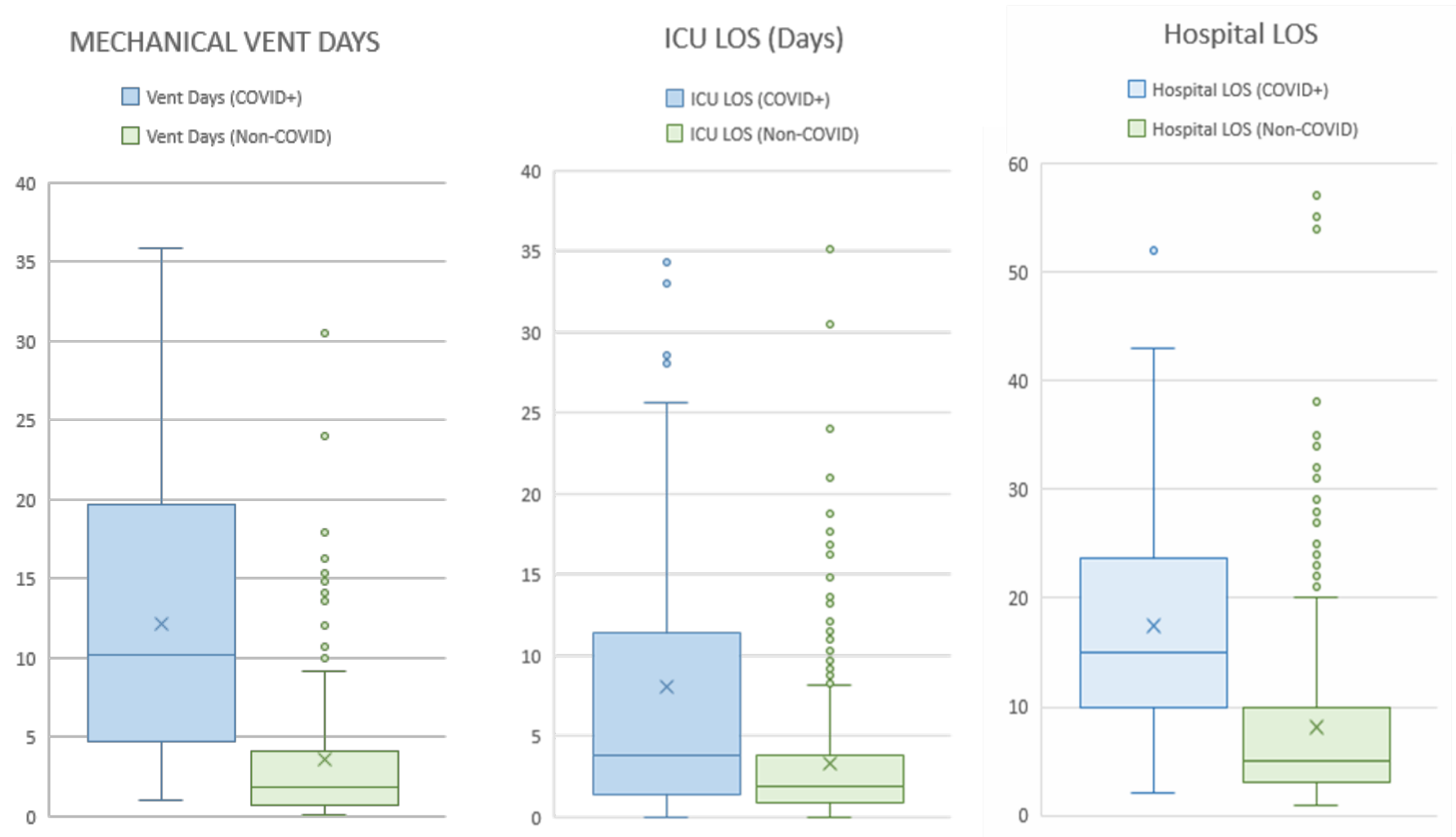


MICU & SICU night shift nurses working in the COVID ICU



Dr. Hendrickson administering a study drug to a COVID patient.

ICU COVID-19 Cases: March 1st – May 20th



ICU Therapies & Clinical Outcomes

| COVID+ patients who had an ICU stay between March 1 st Through July 7 th | |
|--|-----------------------------|
| ICU – Level Therapies | Patients – no./total no (%) |
| Invasive mechanical ventilation | 38/63 (60.32%) |
| Prone positioning | 26/63 (41.27%) |
| Neuromuscular blockade | 28/63 (44.44%) |
| Inhaled pulmonary vasodilators | 15/63 (23.81%) |
| Vasopressors | 44/63 (69.84%) |
| Continuous Renal Replacement Therapy | 12/63 (19.05%) |
| Outcomes | |
| Duration of mechanical ventilation (MV)* | |
| MV Days (average) | 17.0 |
| MV Days (IQR) | 17.6 (5.8 – 23.4) |
| Length of stay – ICU [†] | |
| In ICU (average) | 11.2 |
| In ICU (IQR) | 14.0 (1.4 – 15.4) |
| Length of stay – Hospital [‡] | |
| In hospital (average) | 20.3 |
| In hospital (IQR) | 15 (10 – 25) |
| Died in hospital | 8/63 (12.70%) |
| Discharged from hospital | 48/63 (76.19%) |
| Discharged to Home | 33/63 (52.38%) |
| Discharge to outside hospital | 5/63 (7.94%) |
| Discharged to SNF/LTC/LTAC | 8/63 (12.70%) |

* Data shown for patients who are no longer on mechanical ventilation as of 7/7/20 (n=35)

† Data shown for patients who have been discharged out of the ICU as of 7/7/20 (n=60)

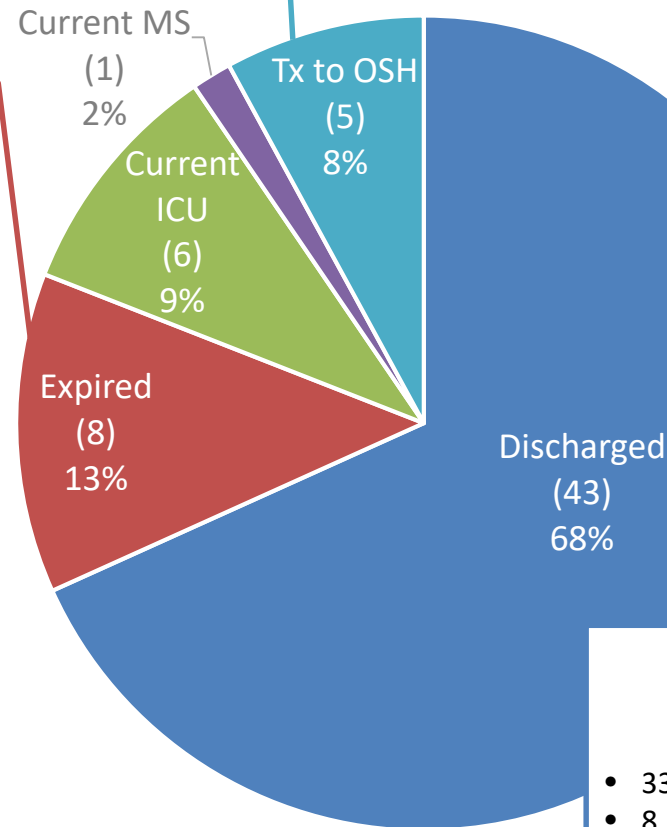
‡ Data shown for patients who have been discharged from the hospital as of 7/7/20 (n=56)

ICU COVID+ Patient Outcomes (as of 7/7/20)

8 Patients died in the hospital

- 6 in the ICU
- 1 in M/S
- 1 at UCSF

| Mortality in Critically Ill Adults with Coronavirus Disease 2019 (published reports) | | Overall ICU Mortality |
|--|--------------------|---|
| Auld, S., et al. (Crit Care Med, May 2020) | Atlanta, GA | 30.9% (67/217) |
| Bhatraju, P., et al. (NEJM, May 2020) | Seattle, WA | 50% (12/24) |
| Richardson, S., et al (JAMA, April 2020) | New York City Area | 88.1% (282/320) <small>*Reflect only patients who received MV</small> |
| Wang, Y., et al (Am J Resp Crit Care Med, June 2020) | Wuhan, China | 38.7% (133/344) |
| Grasselli, G., et al (JAMA, April 2020) | Lombardy, Italy | 26% (405/1581) |
| RECOVERY Collaborative Group (NEJM July 2020) | United Kingdom | 41% UC MV 29% Dex MV |
| ZSFG COVID ICU | San Francisco, CA | 22% Ventilated 16% Total |



5 Patients transferred to an outside hospital:

- 3 to St. Francis
- 2 to Kaiser

43 Patients have been DISCHARGED from ZSFG:

- 33 Discharged to Home
- 8 Discharged to a SNF or LTAC
- 2 Discharged to a DPH Hotel

ZSFG ICU COVID Provider Staffing Plan (March-June)

| Critical Care COVID/ High probability PUI census surge | Critical Care COVID Teams | Countermeasures |
|--|--|---|
| 0-2 | Absorbed onto current teams | None |
| 3-10 | COVID Team A | 2 attendings, 2 senior residents, 2 anesthesia residents |
| 11-20 | COVID Teams A + B, Anesthesia Rapid Strike | 4 attendings, 4 residents, 1 PCCM fellow, 1 CRNA |
| 21-30 | COVID Teams A + B + C, Anesthesia Rapid Strike | 6 attendings, 6 senior residents, 1 PCCM fellow, 1 CRNA |
| >30 | COVID Teams A + B + C, Anesthesia Rapid Strike and Flex | 8 attendings 6 senior residents, 1 PCCM fellow, 1 CRNA |

ZSFG MICU COVID Provider Staffing Plan (August -)

| Combined Census | COVID+/PUI Census | Attending | Fellows | Resident | Intern |
|-----------------|-------------------------------|---|--|-----------------------|---------------------|
| 0-16 | 0-2 | 1 MICU Attending 0 COVID Attending | 1-2 MICU Fellows -In house AM -In house/home call PM | 4 IM R3s | 4-5 R1 |
| 0-16 | 3-10 | 1 MICU Attending 2 COVID Attending (AM/PM) | 1-2 MICU Fellows | 4 IM R3s | 4-5 R1 |
| 17-24 | 3-10 | 1 MICU Attending 2 COVID Attending ⁺ (AM/PM) | 1-2 MICU Fellows | 4 IM R3s | 4-5 R1 |
| 17-24 | 11-20 (2-4 COVID+ on MICU) | 1 MICU Attending 4 COVID Attendings ⁺ (2 AM/2 PM) | 1-2 MICU Fellows [*] | 4 IM R3s [*] | 4-5 R1 [*] |
| >24 | >20 | 1 MICU Attending 6 COVID Attendings ⁺ (3 AM/3 PM) | 1-2 MICU Fellows [*] | 4 IM R3s [*] | 4-5 R1 [*] |

+ Attendings are providing direct patient care for >10 COVID patients, or resident combined census >16.

*Medicine and anesthesia residents and fellows may become available as clinics and ORs close down.

Faculty available

- 16 standing MICU faculty
 - 12 PCCM primary; 4 affiliated (DEM, LBC, HIV, Anes)
 - 2 not doing COVID care = 14 available
 - 6 Asst Prof
 - 5 Assoc Prof
 - 3 Full Prof
- 14 additional faculty have been emergency credentialed as of 8/10
 - 11 Instructors
 - 2 Asst prof
 - 1 Full prof

Acknowledgments

- ICU RNs
- Respiratory Therapy
- Pharmacy
- Residents
- Faculty
- Infection Control and ID teams
- ZSFG Hospital Administration
- Laboratory Medicine Faculty and Staff
- Ultrasound Faculty and Staff
- Swift action of DPH and Mayor Breed

