Update on The Department of Medicine Covid-19 Epidemic Efforts #3 (April 23, 2020)

Yaron Tomer, MD

Chair, Department of Medicine, Albert Einstein College of Medicine, Montefiore Medical Center

#MontefioreProud
We’ll win. I guarantee it.

Joe Namath
<table>
<thead>
<tr>
<th></th>
<th>April 22, 2020</th>
<th>April 6, 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>2,582,529</td>
<td>1,289,380</td>
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<tr>
<td>US Cases</td>
<td>825,306</td>
<td>337,971</td>
</tr>
<tr>
<td>New York State:</td>
<td>258,361</td>
<td>123,160</td>
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<tr>
<td>NYC Cases:</td>
<td>144,190</td>
<td>67,551</td>
</tr>
<tr>
<td>Montefiore Census:</td>
<td>1,617</td>
<td>1,703</td>
</tr>
</tbody>
</table>

(peak 2,015)
Admitted & Discharged From ED (4.22.2020)

From: NPG

- Treated and Discharged from ED
- Admitted
Covid-19 MHS & MMC Discharges (4.22.2020)

3,726 Covid-19 patients discharged home (4.22)
Thank You!!!
# Thank You Einstein Students

## EINSTEIN STUDENT VOLUNTEERING

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Students Involved</th>
<th>Volunteer Hours</th>
<th>Other Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient Subinterns</td>
<td>9</td>
<td>876</td>
<td>CHAM, TLC, and Jacobi</td>
</tr>
<tr>
<td>Occupational Health Services Call Center</td>
<td>103</td>
<td>2,008</td>
<td>Volunteers staff the Montefiore OHS COVID-19 hotline</td>
</tr>
</tbody>
</table>
| PPE Manufacturing                 | 50                | 660             | Face shields made 2,291
|                                  |                   |                 | Surgical masks made 3,017                         |
| PPE Donations                     | 20                | 350             | Surgical Masks 17,575
|                                  |                   |                 | N95s 1,300
|                                  |                   |                 | Cloth/non-surgical masks 554
|                                  |                   |                 | Faceshields 1,301
|                                  |                   |                 | Boxes of Gloves 109
|                                  |                   |                 | Gowns 100
|                                  |                   |                 | Scrub Sets 256
|                                  |                   |                 | Goggles 33
|                                  |                   |                 | Dust Masks 50
| Einstein Cares                   | 117               | 44              | Childcare, pet-sitting, and grocery service for healthcare workers |
| Telehealth Internal Medicine      | 33                | 312             | Virtual patient care                               |
| Telehealth Family Medicine        | 12                | 384             | Virtual patient care                               |
| Food for the Frontlines          | 10                | 75              | Delivering donated meals to healthcare workers at Bronx hospitals |
| Harm Reduction and Addiction Medicine | 3                 | 20              |                                                    |
Thank You Einstein Students

Congratulations
Class of 2020!
Thank You Allied Residents

- Derm: **12** (residents)
- General Surgery **5** (residents)
- OB-Gyn: **8** (residents, Atteng, PA) Weiler 11S
- Ophtho: **12** (residents);
- Ortho: **28** (18 residents + 10 PAs)
- Pathology: **1** (IM trained fellow)
- PM&R: **17** (residents)
- Podiatry: **12** (residents)
- Psychiatry: ~**30** (residents, attend’s, NPs)
- Radiology: **18** (residents and NPs)
- Rad-Onc: **8** (residents)
- Urology: **11** (residents)
Thank You Moses/Weiler Residents

**Pre-COVID**

Moses: 9 teams  
Weiler: 7 teams  

Team Structure:  
1 attending  
1 PGY2 or PGY3  
2 interns  
1 Sub-Intern  

**COVID**

Moses: 16 teams  
Weiler: 14 teams  

Team Structure:  
1 attending  
1 PGY2, or PGY3, or PGY1  
1 allied resident  

Pre-COVID

Codes 2-10/day at each campus  

COVID

Codes 5-30/day at each campus  
Support other services overnight (e.g. pediatrics)  
CCU/ICU have been very challenging due to patient acuity
“The house staff has set an example for our profession.

I am unbelievably proud of each and every one of them and can say that this is one of the best and worst moments of my career- seeing the house staff rising to their potential, band together for each other and our patients who needs us is inspiring.”

Dr. Lauren Shapiro, PD
Pre-COVID
6 inpatient teams
1 ICU team

COVID
13 inpatient teams
3 ICU teams

Day Team Structure
1 attending
1 PGY2 or PGY3
2 Interns
1 Sub-Intern
1 Medical Student

Day Team Structure
1 attending
1 Intern
1 Allied Resident

Thank You Wakefield Residents
Residents’ Clinic: Telemedicine

Telemedicine:

House Staff have gone above and beyond in supporting our outpatients and preventing ED visits
Thank You Wakefield Residents

Bravo to our House Staff

“For being exceptional physicians in a truly exceptional time. Your compassion, fortitude and resilience in this time of suffering is a shining example for all of us.”

Dr. Grace R. Kajita, PD
Thank You Physician Volunteers

<table>
<thead>
<tr>
<th>Source</th>
<th>Recruited by DOM</th>
<th>Deployed</th>
</tr>
</thead>
<tbody>
<tr>
<td>House staff alumni</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Einstein graduates</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>39</td>
<td>9</td>
</tr>
</tbody>
</table>
• Outpatient frontlines
• Inpatient frontlines
• Communication
• Research
• The new normal preparedness
• Divisional activities
• Outpatient frontlines
• Inpatient frontlines
• Communication
• Research
• The new normal preparedness
• Divisional activities
Outpatient Frontlines: Tele-visits

Transition from Face to Face Visits to Telemedicine
Outpatient Frontlines: Tele-visits
• Outpatient frontlines
• Inpatient frontlines
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Michelle Gong, MD
Chief, Division of Critical Care
Chief Pulmonary Division
Professor of Medicine
Professor, Department of Epidemiology & Population Health
Critical Care Division

To meet demand ICU bed capacity Increased Significantly
Critical Care: Mobilization of Many Departments

- Surgery
- Anesthesia
- ENT
- Urology
- Vascular Surgery
- CT Surgery
- Plastic Surgery
- Hematology/Oncology
- Neurology
- Neurosurgery
- Medicine Subspecialties:
  - Cardiology
  - Nephrology
  - Endocrinology
  - Rheumatology
  - GI

- Attendings
- Residents
- Fellows
- PA’s
- NP’s
- CRNA’s
Even as admissions decrease CCM responding to high volume of rapid responses, Intubation, Cardiac Arrests
Critical Care Division

Training and education: protocols & lectures

Divya Reddy, MD
– Developed a pulmonary protocol for floor patients.
– Created a video lecture on ventilator management (on DOM website)

Krystal Clevens, MD
– Lectures about high flow nasal cannula management and sedation available on DOM website

Sami Nachman, MD
– Developed an in-service on the new LTV ventilators that were added

Vivek Murphy, MD
– Video lecture about ARDS management available on DOM website
– Protocol and workflow to follow patients who have had procedures delayed due to COVID-19 pandemic

Dan Fein, MD
– Lecture on Optimizing Ventilator Settings for Patients Outside of an ICU During the COVID-19 Pandemic
Command Center

- 24/7 hotline for Critical Care consults and questions
- Provide E-ICU rounds to new ICUs not lead by CCM
- Remote monitoring of patients in legacy and new ICUs
- Dispatch Critical Care Staff to Rapid Responses, CCM consults & Cardiac Arrest Codes
- Pulmonary consult and management of ventilators for patients outside of the ICU
- Manage transfers of ICU patient to Montefiore
Research

Sarilumab: An adaptive Phase 2/3, randomized, double-blind, placebo-controlled study

PETAL Network: Outcomes Related to COVID-19 treated with Hydroxychloroquine among In-patients with symptomatic Disease (ORCHID)

CDC surveillance: COVID-19 Surveillance in Healthcare Workers and ICU Patients: Observational Studies from the Influenza Vaccine Effectiveness in the Critically Ill (IVY) Network

Prospctive Cohort and Registry – CORAL: PETAL COVID-19 Observational Study

TREAT-ECARDS for COVID: TRanslate Evidence into AcTion Electronic Clinical decision support in ARDS (TREAT-ECARDS)  Sponsor: AHRQ
Machine learning algorithm to identify patients at risk for ARDS during the COVID Pandemic
Division of Hospital Medicine

William Southern, MD, MS
Chief, Division of Hospital Medicine
Professor of Medicine
March 26th - Models Predicted that Montefiore Will be Overwhelmed in 7 Days
Montefiore & Division of Hospital Medicine Response

- **Bed expansion/staffing**
  - Systematic physician deployment (IM Faculty, IM House staff, Allied)
  - Hospitalist, Teaching teams Restructured & Synchronized

- **Coordination of Operations (Hospital Leadership/Nursing)**
  - Bed openings
  - Triage of patients (who can go where)
  - Equipment and PPE

- **Creating Standards**
  - Protocols: (No/poor data, Experience, Simple, Continuously updated)
  - Mentorship/support for Non-Medicine Providers
  - Communications (Daily updates, Division Meetings, Nightly Brief)
# Hospital Medicine Leadership Teams

**Hospital Medicine Leadership:**
- Jeff Ceresnak
- Jessica Dekhtyar
- Keron Lezama
- Andrea Porrovecchio
- Anita Burch

**Stepped into Leadership:**
- Jessica Dekhtyar- Director Hutch
- Jessica Pacifico- Director Moses
- Olena Slinchenkova- Director Wakefield

**The Very First to take care of COVID:**
- Glenda Agustin      Sweta Chekuri
- Luke Sponholtz      Trina Dhar
- Tony Fojas          Tulay Aksoy

**The Hutch Team:**
- Nidhi Dhar- Floor Director
- Ross Kaye- Night Director
# Hospital Medicine Leadership Teams

## Standards of Care:
- Erick Oran
- Ben Koo
- Sumeet Singh-Tan

## Off-Service Advisors/Mentors:
- Laurel Mohrmann
- Sameen Farooq

## PA Leadership:
- Rita Migliaccio
- Leslie Lehner
- Michael Sapadin

## Triaging:
- Trish Blanco
- Janine Adamczyk
- Cameron Locke

### Standards of Care:
- Solicited & created protocols, updated daily
- Created admission order set.
- Created note template
- Daily orientation for new “Allied”

### Off-Service Advisors/Mentors:
- Support to Non-Medicine services: Peds, Onc, Neuro
- Stationed on unit for “opening day”
- Daily rounding on each unit

### PA Leadership:
- Staffing challenges ~ 30% of staff out
- PAs took on new, challenging roles (eg Code Team)

### Triaging:
- Developed criteria for transfer to post-acute areas: TLC, Grand Hall, Gym, Hutch
- Chart review and acceptance for Pt’s prior to transfer
- Result: NO CODES in any post-acute area
Medicine Service: Pre-Covid

- Moses: 350
- Einstein: 200
- Wakefield: 150
- Hutch: 0
Medicine Service Covid Expansion: 385 Beds (55% increase)

Non-Medicine Departments: 122 Beds

Medicine Department: 263 Beds

Moses: 350 Beds
  - Other Depts: 59
  - Medicine: 105
  - Normal: 200

Einstein: 200 Beds
  - Other Depts: 122
  - Medicine: 78
  - Normal: 150

Wakefield: 150 Beds
  - Other Depts: 78
  - Medicine: 150
  - Normal: 21

Hutch: 21 Beds
## DOM Expansion: 263 Beds

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Location</th>
<th>Usual Use</th>
<th>Beds</th>
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<tbody>
<tr>
<td>Moses</td>
<td>Grand Hall</td>
<td>Gatherings</td>
<td>23</td>
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<tr>
<td></td>
<td>Medical Intervention Unit</td>
<td>Interventional Radiology</td>
<td>10</td>
</tr>
<tr>
<td>Forman 7AW</td>
<td></td>
<td>Surgery</td>
<td>13</td>
</tr>
<tr>
<td>Forman 7B</td>
<td></td>
<td>Surgery</td>
<td>13</td>
</tr>
<tr>
<td>Einstein</td>
<td>2 North East</td>
<td>Rehab Gym</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Day Rooms</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>10 North</td>
<td>Surgery</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>11 North</td>
<td>Surgery</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>11 South</td>
<td>Onc/GYN</td>
<td>28</td>
</tr>
<tr>
<td>Wakefield</td>
<td>6 South</td>
<td>Gym</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>6 North</td>
<td>Surgery</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>6 East</td>
<td>Rehab</td>
<td>31</td>
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<tr>
<td></td>
<td>Dining Room</td>
<td>Dining</td>
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<tr>
<td>Hutch</td>
<td>3\textsuperscript{rd} Floor</td>
<td>Peri-Op</td>
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### Non-Medicine Departments: 122 Beds

<table>
<thead>
<tr>
<th>Department</th>
<th>Location</th>
<th>Beds</th>
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<tbody>
<tr>
<td>Pediatrics</td>
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<tr>
<td>Neurology</td>
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<tr>
<td>Oncology</td>
<td>NW 8</td>
<td>15</td>
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<tr>
<td>Family Medicine</td>
<td>Forman 7AW</td>
<td></td>
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<tr>
<td></td>
<td>Forman 7B2</td>
<td>72</td>
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<tr>
<td></td>
<td>NW 8</td>
<td></td>
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</tbody>
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- Hospitalist on site when opening
- Hospitalist mentor rounds on all floors 7days/week
Dr. Pacifico Keeping Track of COVID Care
• Outpatient frontlines
• Inpatient frontlines
• Communication
• Research
• The new normal preparedness
• Divisional activities
First newsletter sent on March 10, 2020
Sent 33 issues to date
Distribution: 6870; 5201 Total Opens (76%)

Top Links: (varies per day):
• New COVID-19 Treatment Guidelines & Protocols
• MHS Daily Cases, Discharges
• Grand Rounds and Town Hall Lectures
• Video Lectures: Total Views = 3056
  • Respiratory Management;
  • Ventilator Management;
  • Sedation Video
  • Tips: N95 Reprocessing Instructions; Montefiore Health, etc.
• Faculty Journal Articles
• Discounts and Perks
• Housing, Parking, Food, Resources
• Videos submitted to healthcareheroes@Montefiore.org
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COVID-19 is a Systemic Disease

1 Lungs
A cross section shows immune cells crowding an alveolus, or air sac, whose walls break down during attack by the virus, diminishing oxygen uptake. Patients cough, fevers rise, and breathing becomes labored.

2 Liver
Up to half of hospitalized patients have enzyme levels that signal a struggling liver. An immune system in overdrive and drugs given to fight the virus may be causing the damage.

3 Kidneys
Kidney damage is common in severe cases and makes death more likely. The virus may attack the kidneys directly, or kidney failure may be part of whole-body events like plummeting blood pressure.

4 Intestines
Patient reports and biopsy data suggest the virus can infect the lower gastrointestinal tract, which is rich in angiotensin-converting enzyme 2 (ACE2) receptors. Some 20% or more of patients have diarrhea.

6 Eyes
Conjunctivitis, inflammation of the membrane that lines the front of the eye and inner eyelid, is more common in the sickest patients.

7 Nose
Some patients lose their sense of smell. Scientists speculate that the virus may move up the nose’s nerve endings and damage cells.

8 Heart and blood vessels
The virus (teal) enters cells, likely including those lining blood vessels, by binding to ACE2 receptors on the cell surface. Infection can also promote blood clots, heart attacks, and cardiac inflammation.

9. CNS Effects
ACE2 Is Expressed in Many Tissues


Pancreatic Islets

Lungs

Kidneys

Heart
Viral Entry Into Lung Epithelial Cells

Meng T. Cao H, Zhang H et al. The insert sequence in SARS-CoV-2 enhances spike protein cleavage by TMPRSS bioRxiv (2020); doi: https://doi.org/10.1101/2020.02.08.926006
Ongoing Clinical Trials

Marla Keller, MD
Vice Chair for Research

- **NIAID Phase 2 Adaptive Remdesivir Trial** – (PI, B. Zingman)
  Multicenter, randomized, double-blind trial (target 440, 54 sites)

- **PHASE I COMPLETED**
  Multicenter, randomized, double-blind trial (target 440, 54 sites)

- **CytoDyn Adaptive Phase 2b/3 Leronlimab** (PI: H. Seethamraju)
  Multicenter, randomized, double-blind trial (target 390, 30 sites)

- **Regeneron Adaptive Phase 2/3 Sarilumab** (PI: M. Gong)
  Multicenter, randomized, double-blind trial (target 400, 63 sites)

  National, multicenter trial to evaluate passive antibody therapy
NHLBI PETAL Network (PI: M. Gong)
Multicenter, randomized, placebo-controlled, trial to evaluate HCQ for hospitalized patients (n=510, >40 sites) Will start next week

RAMIC (PI: C. Tow)
Randomized, double-blind trial to evaluate ACEI in Covid-19 (n=560, 15 sites) UCSD/Pfizer

~30 IRB approved protocols
Investigate clinical & epidemiological characteristics of COVID-19 in different cohorts CKD, Diabetes, CVD, HIV, Critically ill, SCD, Lung imaging, ECMO, Transplant Pt’s

Specimen biorepository
In development by ICTR & Pathology; serum, plasma, whole blood, urine to start
• Outpatient frontlines
• Inpatient frontlines
• Communication
• Research

• The new normal preparedness
• Divisional activities
MISSION

Building upon our Bronx roots, we aim to improve the health of the people and communities we serve through compassionate, patient-centered care, scientific discovery, humanistic education, community engagement and absolute commitment to social justice.
The “New Normal” Preparedness

Clinical operations
  • Inpatient
  • Outpatient

Education
  • Residents / Fellows
  • Medical Students

Research
  • Covid-19
  • Non Covid-19

Community outreach
  • Housing
  • Food
  • Other challenges
• Outpatient frontlines
• Inpatient frontlines
• Communication
• Research
• The new normal preparedness

• Divisional activities
DIVISION OF ALLERGY & IMMUNOLOGY

David Rosenstreich, MD
Chief, Division of Allergy & Immunology
Professor of Medicine
Professor of Microbiology & Immunology
Professor of Otolaryngology
Inpatient
• 3 teams of attendings deployed; Allergy fellow deployed to COVID-19 units

Outpatient
• Tele-visits
• Oncology drug desensitization activity continuing
• Administering biologicals at MAP. Planning to resume selective allergy immunotherapy
• Relocated allergen extracts preparation to a new laboratory

Pharmaceutical research
• Relocated drug trial studies and investigational; continuing at new site.

COVID-19 treatment
• Cytokine storm syndrome. Developed diagnostic and treatment protocol in conjunction with rheumatology. Handling all Weiler CSS eConsults.

Research
• Studies on allergic risk factors (asthma, IgE, eosinophilia, anosmia) in COVID-19 disease
Cardiology Services

STEMI 24/7 coverage: diverted to Moses
Urgent PCI and EP procedures 12/7: diverted to Moses
Inpatient Cardiology: eConsults, bedside (EP, HF consults)
Outpatient Cardiology: face to face MAP-7, 1628 Eastchester Rd (replacing Hutch), Wakefield, > 10 satellite offices

Cardiology Covid-19 Units

Intensive Care: Moses F6 CCU/ICU, Cath Lab; Weiler Cath Lab RAU CCU/ICU
Telemetry-Intermediate care: Moses F6, Weiler 8S Purple Team
Medical Wards: Weiler 10N, Wakefield (3 Teams)

Cardiology Fellows

CCUs: 5 CCU’s at all campuses including Jacobi

Medicine Covid Units

Critical Care ICU Support

Consult Services: General Cardiology, EP, HF
Innovation

Telemetry Patch Application
- Monitoring COVID-PUI patients
- Telemetry patch devices on high risk COVID / PUI
- Monitor QT intervals, VT, A fib, Bradycardia

Research
- SARS-CoV-2 Infection of the Human Heart: Clinical Correlations and Molecular Mechanisms - R Kitsis (Submitted RO1)
- Myocardial dysfunction and arrhythmias among CoV2 survivors
- Montefiore COVID-19 Cardiovascular Disease Registry
- Myocardial Involvement with COVID-19 ECMO Registry
- Patch-based Mobile Cardiac Telemetry Device for cardiac monitoring
- Cardiac resuscitation outcomes in patients with COVID-19
DIVISION OF DERMATOLOGY

Steven R. Cohen, MD, MPH
Chief, Division of Dermatology
Professor of Medicine
Division of Dermatology

Dermatology Residents/Fellows Raise $18,387 for MMC/AECOM
DIVISION OF ENDOCRINOLOGY AND METABOLISM

Jill Crandall, MD
Chief, Division of Endocrinology
Professor of Medicine
### Hospital deployment
- 3 attending teams (Moses, Weiler)
- 4 fellows (ICU)
- 2 NPs
- 1 admin staff

### Inpatient Consults
- Implemented e-consults
- Many Covid patients with decompensated DM, DKA, HHS

### Outpatient
- > 800 telephone visits, ~300 video visits
- Use video/YouTube for diabetes teaching (CGM, smart insulin pens, meters)
- Teaching clinics at FCC, CFCC, Wakefield, Jacobi: All tele-visits
- Psychologist (Dr. Stephanie Leung) mental health support

### Diabetes Initiatives
- DKA sub-Q insulin protocol (Dr. Shivani Agarwal)
  - Minimize nursing burden & PPE use; Adopted in ED, ICU, floors; Widely disseminated (ADA)
- Continuous glucose monitors (CGMs) used for selected patients in ICUs and floor
- Steroid induced hyperglycemia protocol under development
- **$25,000 from Helmsley Foundation** to promote care for T1D patients affected by COVID (illness, loss of job/insurance)
- **Donations** of glucose meters, strips and CGMs from manufacturers
• **COVID-related data collection:**
  – COVID-19 Diabetes Outcomes Project (IRB approved)
  – Continuous Glucose Monitoring (CGM) in the Inpatient Setting (pending)
  – Subcutaneous DKA Protocol Outcomes (pending)
  – Type 1 Diabetes Exchange—national registry for Type 1 diabetes patients with COVID-related illness

• **Ongoing clinical research:**
  – GRADE doing telephone visits, remote collection of capillary blood for HbA1c and shipping diabetes meds to ~200 active study participants
DIVISION OF GASTROENTEROLOGY

Thomas Ullman, MD
Chief, Division of Gastroenterology
Professor of Medicine
Cancellation of all elective non-emergent/non-urgent endoscopy
• Dedicated committee to evaluating case requests
• Careful logging of cancelled cases => Can easily call once open for elective endoscopies
• Temporary closure of Moses Endoscopy suite due to Covid cluster => CHAM

Covid deployment
• 6 attendings (including Division Chief) deployed in COVID Units
• 7 Fellows (including Wakefield fellows) deployed to ICU COVID Units
• 3 Fellows Jacobi
• Inpatient: e-consult and live consults, emergent endoscopic support
• Outpatient: tele-visits
• Educational activities continue

Weekly Zoom Division Happy Hour attended by faculty and fellows over on Sundays
DIVISION OF GENERAL INTERNAL MEDICINE (DGIM)

Julia Arnsten, MD
Chief, Division of General Internal Medicine
Professor of Medicine
Professor of Epidemiology & Population Health
Professor of Psychiatry
• Inpatient COVID teams covered at Moses, Weiler, and Wakefield by ~40 DGIM attending physicians
• Friday weekly Zoom call: Set expectations, relieve anxiety, review epidemiological data
• Televisits: 4 residents teaching practices

• Ongoing buprenorphine treatment for OUD by Zoom call every two weeks to help providers use telehealth - 83 providers across NYS joined last call
Twice weekly Zoom calls of all DGIM PIs, research and admin staff

- COVID19 data
- COVID19 clinical experiences

Generate research ideas; Discuss COVID19-related scholarly work

R
division of General Internal Medicine: Research

- Twice weekly Zoom calls of all DGIM PIs, research and admin staff
- COVID19 data
- COVID19 clinical experiences
- Generate research ideas; Discuss COVID19-related scholarly work

Matthew Akiyama
Chinazo Cunningham
Chanelle Diaz
Deepika Slawek

Because of policies of mass incarceration over the past four decades, the United States has incarcerated more people than any other country on Earth. As of the end of 2016, there were nearly 2.3 million people in U.S. prisons and jails. People coming into prison are among the most vulnerable in our society, and during incarceration they are exposed to myriad health threats, including exposure to infectious disease, inadequate nutrition, and lack of medical care. People caught up in the U.S. justice system have all too often been affected by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and improved preparation is essential to minimizing the impact of this pandemic on incarcerated persons, correctional staff, and surrounding communities.

Populations involved with the criminal justice system have an increased prevalence of infectious diseases such as HIV and hepatitis C virus (HCV) infections and tuberculosis. Disparities in sexual determinants of health among groups that are disproportionately likely to be incarcerated — racial and ethnic minorities, persons with substance use disorders or mental illness — lead to greater concentrations of these diseases in incarcerated populations. Yet implementation of interventions to address these conditions is often challenging in correctional settings owing to resource limitations and policy constraints. Therefore, comprehensive responses that address these conditions and the community often need to be developed.

For example, HCV, which is the most prevalent infectious disease in incarcerated populations, is most commonly spread through exposure to blood and body fluids, which can be reduced using measures known to reduce high-risk behavior, such as rapid again therapy. Highly-effective antiviral medications are available that can cure HCV in greater than 90% of patients, but effectiveness is limited to persons with multi-drug resistant or viral mutations in HCV strains. Clearly, it is essential to prioritize in-prison infection control, and the use of surveillance to prevent and control the spread of communicable diseases in correctional settings. This would be easier in the case of SARS-CoV-2.

On Being a Doctor

As physicians who have collectively witnessed the outbreaks of internal medicine, infectious diseases, and Nowhere in New York City for 37 years, we have witnessed tremendous suffering and faced many challenges in providing care. However, we were fortunate to be on the front line of the COVID-19 pandemic, which was more intense and rapid in our urban academic medical center’s medical wards. We have seen the intimate connection with our patients at their most vulnerable points, both powerless to the face of the virus and free to leave with an appropriate diagnosis and care.

With this knowledge and the ability to provide comprehensive care and unprecedented residents physicians in addition to feeling powerless to heal our patients. As the COVID-19 pandemic has ramped through New York City, all physicians, including residents from all specialties have been at the forefront of care, caring for our patients not just for their physical, but their mental and spiritual care, and always being there for our patients.

Finally, and most difficult for us to accept, is the lack of adequate personal protective equipment available to us and other hospital workers on the front lines providing care to patients with COVID-19. On a daily basis, we put ourselves (and therefore our families) at risk. Without widespread testing and adequate personal protective equipment (PPE), we are asked to treat patients at risk for nosocomial transmission of SARS-CoV-2. In both our homes, we do not bring our clothes or shoes into our houses, shower immediately, and even isolate ourselves from our loved ones. Despite our best efforts, we still feel contaminated and dirty, as though we have touched or come near bodies that have been in contact with infected individuals. We try to protect ourselves feel like an egregious betrayal by the healthcare system, public health, and governmental leaders.

The COVID-19 pandemic is far from over, and the expected toll of its toll will be unprecedented. However, by understanding our experience, we hope that better preparedness is possible for the next public health crisis. We hope that less lives will be lost, and that people will be less likely to think about the next pandemic as if it were a distant experience. We hope that the next pandemic will be better prepared with adequate PPE and education, and that the healthcare system, public health, and governmental leaders will have a better plan for the next pandemic.

Flattening the Curve for Incarcerated Populations — Covid-19 in Jails and Prisons

Matthew J. Akiyama, M.D., Anne C. Spaulding, M.D., and Josiah D. Rich, M.D.

Matthew J. Akiyama, M.D., Anne C. Spaulding, M.D., and Josiah D. Rich, M.D.

Chinazo Cunningham
Chanelle Diaz
Deepika Slawek
Division of General Internal Medicine: New Covid-Related Research

Approved IRB protocols
- Clinical outcomes of people living with HIV and COVID (Viraj Patel, David Hanna, Uri Felsen, Kathy Anastos, Rob, Beil)
- Impact of COVID19 on anxiety and substance use (Chinazo Cunningham, Shadi Nahvi, Joanna Starrels, Deepika Slawek)
- WIHS/MACS combined cohort COVID study (Kathy Anastos, Anjali Sharma)

Submitted grant proposals
- Center for AIDS Research (CFAR) supplement: Outcomes of telemedicine for PrEP (Viraj Patel, Rob Beil, Sharon Rikin)

Manuscripts in preparation
- Outpatient HIV and PrEP management during COVID (Viraj Patel)
- Buprenorphine treatment during COVID (Tiffany Lu, Kristine Torres-Lockhart, Chinazo Cunningham)
- Methadone treatment during COVID (Shadi Nahvi)
DIVISION OF GERIATRICS

Joe Verghese, MB, BS
Chief, Division of Geriatrics
Professor of Medicine
Professor of Neurology

Amy R. Ehrlich, MD
Associate Chief of Geriatrics
Professor of Medicine
Clinical Operations

- **Inpatient Deployment:** 12 faculty/6 fellows: Covid units, NH.
- **Outpatient: telemedicine:** Practice, Home visits, Center for the Aging Brain
- **Post Acute Care for COVID-19 patients:** Collaboration with Rehab
- **Montefiore Home Care:** Census= 380
  - 140 patients are COVID-19 discharges: 40 newly on oxygen
  - Remainder high acuity patients in community (wounds/devices)
- **New COVID Rehab only protocol:** Deconditioning, New oxygen, Safety concerns (e.g., Stairs), new Durable Medical Equipment (e.g. walkers)

Teaching

- **Virtual Geriatrics Clerkship:** 3rd & 4th year medical students
  Claudene George, MD

Covid-19 and Nursing Home

- NH are among highest risk settings for COVID-19
- Increased mortality with advancing age, comorbid illness and frailty\(^1\)
- NY State: ~ 131,000 residents in NH/Assisted Living
- 3,060 COVID-19 related deaths\(^2\) (2.3% of NH residents in NY State)
- **Complex issue:** How to distinguish excellent end-of-life care at NH versus inadequate care

\(^1\)NEJM McMichael et al, \(^2\)NYS DOH
DIVISION OF HEMATOLOGY

Henny H. Billet, MD
Chief, Division of Hematology
Professor of Medicine
Professor of Pathology
Inpatient Deployment:
- Fellows, attendings, NP’s, Nurses, CRA’s
- Inpatient Consults

Outpatient Operations: Remote clinics:
- FCC, CFCC, GGB
  - Cellavision Auto-Analyzer screen can be viewed remotely

Research
- Vascular: Clinical Characteristics of Deep Venous Thrombosis in Patients Hospitalized for SARS-CoV-2 Infection (Issam Koleilat et al)
- Temporal relationship of coagulation parameters to outcome (Morayma Reyes Gil; Jesus Gonzalez Lugo and Shafia Rahman)
- Effect of anticoagulation on morbidity and mortality in COVID (Eran Bellin, Lindsay Stahl, Morayma Reyes)
- SCD – COVID: SCD patients doing well => Use of Hydroxyurea in COVID patients?

Anti-Coagulation Protocols
DIVISION OF HEPATOLOGY

Allan Wolkoff, MD
Chief, Division Hepatology
Professor of Medicine
Professor of Anatomy & Structural Biology
Clinical Operations

- **Inpatient:**
  - Deployment to Covid units
  - Coverage of liver inpatient unit
  - Inpatient eConsults
  - Liver transplantation: pre- and post-transplant patient care
- **Outpatient:** Tele-visits on both campuses; In-person visits; paracenteses in cirrhotic patients with ascites

Covid-Related Research

- Many Covid-19 patients have abnormal liver functions
- A study of liver functions in Covid patients:
  - Prevalence of abnormal liver enzymes (AST or ALT) in patients admitted to MMC with proven Covid-19 infection.
  - Determine whether liver enzyme elevation correlates with changes in markers of inflammation including CRP, LDH, D-Dimer.
  - Determine whether liver enzyme elevation correlates with severity of disease
  - Determine whether liver dysfunction correlates with clinical outcome.
- Sera from non-Covid-infected patients from biorepository provided to Dr. Chandran as controls in establishing a Covid-19 antibody assay.
Liise-anne Pirofski, MD
Chief, Division of Infectious Diseases
Professor of Medicine
Professor of Microbiology & Immunology
Leadership Teams

• Clinical Services & treatment Protocols Team: B. Zingman, I. Gendlina, M. Corpuz
• Antibiotic Stewardship Team: P. Nori, Y. Guo, V. Chen, R. Bartash, B. Zingman

Inpatient Operations

• Institution-wide ID consult support: ~ 28 teams of faculty & fellows deployed
• Established inpatient consult pathway: ~ 1,000 COVID eConsults in March

Testing

P. Nori, W. Szymczak, A. Fox, Y. Goldstein, J. Faix, E. Cadoff, M. Prystowsky
- Pathology laboratory liaison for rapid in-house testing: > 500 daily capacity
- Employee testing (with Eric Epstein): Triaging questions on testing and return to work
  Serology testing: working with clinical laboratory

Research

• NIH adaptive RCT Remdesivir trial (Barry Zingman, PI), 78 Pt’s enrolled (highest in US)
  • Randomized blinded phase 2 trial of CP versus FFP to prevent resp. decompensation
• Compassionate use/Expanded access: 47 (Weiler 39, Moses 6, Wakefield 2)

J Clin Invest. 2020, https://doi.org/10.1172/JCI138003.
Epidemiology Infection Control

• Developing infection prevention policies for COVID19

COVID19 Hotline: advice to providers

• Data Reporting: to hospital leadership and to NYS

• Management of clusters of cases of COVID19 disease

• Expand testing of patients and associates for COVID19

• Support and collaborate with OHS

Division of Infectious Diseases

Hospital Epidemiology and Infection Control Team
Theresa Madaline, Inessa Gendlina, Greg Weston, Marilou Corpuz, Ruchika Jain, Chitra Punjabi, Priya Nori, Meg Aldrich

Epidemiology

• Command Center:
  – Liaising and advising hospital leadership

• Support infrastructure development:
  – Safe PPE use and reuse
  – Procuring PPE from all possible sources

• Working with engineering to construct new patient care areas

• Development of hospital policies and messaging

• Liaising with local leaders, government officials and agencies

Infection Control

• Developing infection prevention policies for COVID19

• COVID19 Hotline: advice to providers

• Data Reporting: to hospital leadership and to NYS

• Management of clusters of cases of COVID19 disease

• Expand testing of patients and associates for COVID19

• Support and collaborate with OHS
DIVISION OF NEPHROLOGY

Michael Ross, MD
Chief, Division of Nephrology
Professor of Medicine
Inpatient

- Severe AKI requiring dialysis ~30-40% of Covid patients in ICUs
- Following ~ 200 inpatients
- Limited by number of HD machines, HD nurses, national shortages in CRRT supplies, and hypercoagulable state, leading to clotting of CRRT circuits
- Kidney transplant recipients are severely affected by COVID-19

Outpatient

- ~ 900 outpatients with ESRD on HD
- Nearly all outpatient HD units in Bronx have patients with COVID-19

strategies to increase capacity for renal replacement therapies

Hemodialysis

- Reduced HD frequency to twice weekly, shortened treatment time
- Potassium binders and fluid restriction to reduce need for dialysis
- Purchased additional HD machines
- Dialyzing all stable COVID-19-positive patients in HD unit

Continuous renal replacement therapy (CRRT) Dr. Maureen Brogan

- Purchased additional CRRT machines
- Allows for 2 patients to be treated per machine per day
- Partnered with perfusionists to administer CVVHD treatments
Acute peritoneal dialysis  Dr. L. Golestaneh, Dr. M. Sourial, M. Neubauer
- Kidney transplant surgeons and Interventional Radiology placing PD catheters (n=30)
- Procured 15 automated PD cyclers
- Acute PD team setting up PD cyclers and performing PD treatments 7 days/week

Kidney Transplant  Dr. Enver Akalin
- > 80 kidney transplant recipients hospitalized with covid-19
- ~ 20% mortality – higher than general population or patients with ESRD on HD
- High rate of thromboembolic complications
- Specialized treatment protocols developed for kidney transplant patients with Covid-19
- Participating in clinical trials to improve outcomes in transplant recipients with Covid-19

Research
Numerous ongoing research projects to determine risk factors for kidney disease in Covid-19, devise new treatment strategies, study pathogenesis of SARS-CoV2-induced AKI
DEPARTMENT OF ONCOLOGY

Roman Perez-Soler, MD
Chair, Department of Oncology
Professor of Medicine
Professor of Molecular Pharmacology
Negative Impact of Covid 19 Infection on Cancer Patients

1. Higher mortality from Covid 19 in cancer patients compared to matched controls (Mehta et al. in preparation)
2. Delays in initiating cancer therapy => negative impact on outcomes of cancer Pt’s

Objectives of Patient Care Restructuring Activities in Medical Oncology

1. Contribute to MMC fight against the Covid 19 epidemic
2. Minimize de novo Covid 19 infections in the cancer patient population
3. Avoid delays in initiation of therapy for newly diagnosed patients

Contributions of Medical Oncology to MMC Fight against Covid 19 epidemic

1. Inpatient Oncology unit (NW8) converted into a Covid unit staffed by Oncology Faculty and Fellows (20 beds)
2. Deployment of 9 Hem/Onc fellows to ICU
3. Deployment of 26 nurses and NP’s to various Covid 19 inpatient units and ICU
Minimizing de novo Covid 19 infections in our cancer patients

1. Separation of Covid 19+ and - patients to designed areas both in the inpatient and outpatient setting:
   - Covid 19 **negative** patients: all infusions at GGB; all admissions to NW2 & Weiler 3
   - Covid 19 **positive** patients: all infusions at Gold Zone; all admissions to NW8 & Weiler 11S

2. Covid 19 testing of all new cancer patients before first in-person visit or first chemotherapy treatment

3. All follow-up visits by Tele-Medicine

Research

Repurposing Oncology Drugs – BTK Inhibitor (Acalabrutinib)

Phase 2 Randomized Study Acalabrutinib vs. Best Supportive Care in Pt’s with COVID-19

Noah Kornblum, MD
DIVISION OF RHEUMATOLOGY

Clement Tagoe, MD, PhD
Chief, Division of Rheumatology
Professor of Medicine
Division of Rheumatology

- **Inpatient:** Most faculty and fellows have been deployed
- **Inpatient:** eConsult service launched; **Lead:** Dr. Ruchi Jain
- **Outpatient:** Outpatient services are being maintained using telemedicine
- **Protocols:** A secondary Hemophagocytic lymphohistiocytosis (sHLH) diagnostic algorithm developed for the cytokine storm syndrome of COVID-19. **Lead:** Dr. Bibi Ayesha and Dr. Anand Kumthekar (collaboration with ID, AI, Peds Rheum. IM CCM)
- **Education:**
  - Rheumatology Med Student teaching continues; successful completion of the 2nd year MSK course via Zoom (run by Dr. Shereen Mahmood)
  - Fellowship training being maintained using telemedicine and a divisional “buddy system” (devised by Dr. Bibi Ayesha and Dr. Irene Blanco)
- **Volunteer Work:** The Office of Diversity Enhancement, led by Dr. Irene Blanco in conjunction with Dr. Sheira Schlair coordinating efforts of medical students to make and distribute PPE
Thank You!!!