



NUTRI NEWS

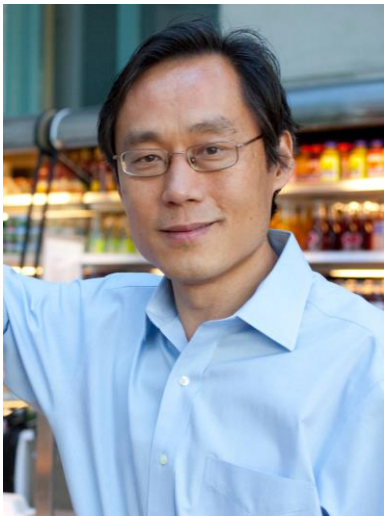
The Department of Nutrition

June 2020

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MESSAGE FROM THE CHAIR ON DIVERSITY & INCLUSION

From Dr Frank B Hu, Professor & Chair, Department of Nutrition:



There is no question we are living a critical moment in history. In the past few months, the COVID-19 pandemic has engulfed the world and further exposed the problems of health disparity and food insecurity in the US. The tragic deaths of Rayshard Brooks, George Floyd, Breonna Taylor, and others before them in the hands of police has sparked global protest against systemic racism and demands for social justice. To echo Dean Williams, racism is indeed a public health crisis, and we should do everything we can in both our personal and professional capacities to confront all forms of racism and racial discrimination.

Along with personal reflections, I have been thinking about our department's efforts around diversity, inclusion, and equity. Although we strive to create a diverse and inclusive community, there is much that can be done. We are committed to continuous growth and improvement and recognize that we can do better.

Let's start by identifying tangible steps to advance this collective goal. One of the actions we're already exploring is how to create a pipeline of underrepresented minority students, postdocs, and faculty. We're also committed to the recruitment and retention of our diverse junior faculty and staff. To enhance these and future efforts, we will be establishing a departmental committee on diversity and inclusion. This committee will engage all members of the department to develop a shared vision and action plan.

In the meantime, I look forward to ongoing discussions on these critical issues and value your ideas as to how our department can further improve our efforts to be more inclusive, diverse, and supportive of each one of our members.

Sincerely,
Frank Hu, Chair, Department of Nutrition

RESOURCES:

There are many resources available for continuous learning, engagement, and action, including these recently shared by **Lilu Barbosa**, our school's new Chief Diversity, Inclusion, and Belonging Officer:

- [Anti-Racist Reading List from Harvard Kennedy School](#)
- [Black Experiences During COVID19 Resource](#)
- [Black Lives Matter Boston Chapter](#) and [Black Lives Matter \(Main Page\)](#)
- [Social Justice Training Institute](#)

Racism is a public health crisis

The killing of George Floyd and the disproportionate impact that COVID-19 has had on people of color are only the two latest examples of how structural racism can lead to devastating outcomes. Harvard Chan School stands together and is committed to helping fight this longstanding racism. This page highlights work from members of the Harvard Chan School community aimed at addressing racism and, ultimately, at helping shape a fairer, more just, and healthier world: <https://www.hsph.harvard.edu/news/racism-is-a-public-health-crisis/>

The Quest for Racial Justice

Stories containing Harvard insights and coverage of the movement against systemic racism in America, from the *Harvard Gazette*: <https://news.harvard.edu/gazette/story/series/the-quest-for-racial-justice/>

NEWS FROM AROUND THE NUTRITION DEPARTMENT

AWARDS

Dr Lorena Pacheco, postdoctoral Research Fellow, has been awarded a Yerby Fellowship under the **Harvard Chan Yerby Fellowship Program**. Named for Dr Alonzo Smythe Yerby, an African-American pioneer in public health, this program aims to expand the diversity of those entering the academic public health field. The program creates a bridge between academic training in public health-related fields and entry-level faculty positions at institutions throughout the United States.

The goal of the program is to advance the intellectual and professional development of each Yerby Fellow. Under the guidance of a senior Harvard Chan School faculty member with compatible interests, Yerby Fellows develop research agendas, receive grant support, and actively pursue publication in peer-reviewed journals. Additionally, Yerby Fellows gain teaching experience and participate in a wide variety of professional development activities. Dr Pacheco's primary mentor is **Dr Frank Hu**; her secondary mentor is **Dr Josiemer Mattei**, both within the Department of Nutrition. Beginning this July with her Yerby Fellowship, Dr Pacheco's secondary mentor will be **Dr Steven Gortmaker**.

Dr Andrea A Lopez-Cepero, Postdoctoral Research Fellow, was selected as a 2020 Health Disparities Research Institute Scholar (from the National Institute on Minority Health and Health Disparities). Scholars in this program are selected based on an interest in becoming a health disparities researcher and for their accomplishments. The goal of the Health Disparities Research Institute is to provide scholars with a broad overview of the leading issues facing minority health and health disparities research and stimulate discussion of proposed research projects.

Dr Deirdre K Tobias, Assistant Professor in the Department of Nutrition, has received the HMS 2020 Dean's Community Service Award. Community service is an integral part of the missions of Harvard Medical School and Harvard School of Dental Medicine. In faithfulness to this commitment, the Dean's Community Service Award was established in 1999 to recognize individuals whose dedication and commitment to community service have made a positive impact on the local, national, or international community.

Since the inception of the Dean's Community Service Award, Harvard Medical School has recognized the contributions of 142 individuals and donated \$1,000 to 138 organizations that serve our community. 11 faculty members have been honored with a Lifetime Achievement Award for Community Service. Dr Tobias received this award on behalf of a non-profit community farm that she helps run called Norwell Farms, on the South Shore. Her team teaches the community about sustainably grown local agriculture and promotes access to healthy food for all. They donate a portion of what they grow to local food pantries.

GRANTS

Dr. Josiemer Mattei, Donald and Sue Pritzker Associate Professor of Nutrition, recently obtained funds from the Puerto Rico Public Health Trust Grants Program to conduct a mixed-methods project to assess food insecurity, access to food and healthcare services, and glycemic control before and during the COVID-19 pandemic, and deeply understand these experiences, in individuals with diabetes in Puerto Rico. **Dr. Andrea Lopez-Cepero**, postdoctoral research fellow, is a co-principal investigator of this study.

In addition, **Dr. Mattei** obtained an award from the Robert Wood Johnson Foundation - Community Change Leadership Network Activation Fund to create an equity-centered pilot program that will connect and empower farmers, consumers, and community clinics stakeholders to increase access to local fresh produce, reduce food insecurity, and improve health in low-income adults in Puerto Rico. Doctoral candidate **Abrania Marrero** is actively contributing to this project. The project expands upon direct relief funds that RWJF awarded Dr. Mattei's team to provide free fresh produce to individuals still living in shelters since the January earthquakes in Puerto Rico and now facing the pandemic.

NEW PUBLICATIONS

Dr Jorge Chavarro, Associate Professor of Nutrition and Epidemiology, together with colleagues from HSPH, MGH and the UK have published several co-authored papers in *Science* and *Nature Medicine* on a new COVID-19 symptom tracker in our NHS cohorts, which contributed data to this consortium. Chavarro and other NHS investigators are listed as members of the consortium.

Rapid implementation of mobile technology for real-time epidemiology of COVID-19. Drew DA, Nguyen LH, Steves CJ, Menni C, Freydin M, Varsavsky T, Sudre CH, Cardoso MJ, Ourselin S, Wolf J, Spector TD, Chan AT; COPE Consortium. *Science*. 2020 Jun 19;368(6497):1362-1367. doi: 10.1126/science.abc0473. Epub 2020 May 5. PMID: 32371477 Free PMC article.

Real-time tracking of self-reported symptoms to predict potential COVID-19. Menni C, Valdes AM, Freidin MB, Sudre CH, Nguyen LH, Drew DA, Ganesh S, Varsavsky T, Cardoso MJ, El-Sayed Moustafa JS, Visconti A, Hysi P, Bowyer RCE, Mangino M, Falchi M, Wolf J, Ourselin S, Chan AT, Steves CJ, Spector TD. *Nat Med*. 2020 May 11. doi: 10.1038/s41591-020-0916-2. Online ahead of print. PMID: 32393804

PRESENTATIONS

Dr Xuehong (Hong) Zhang, Assistant Professor in the Department of Nutrition, was invited to present at the International Liver Cancer Association 2020 Virtual Conference (Sept. 11-13) with the title "*Inflammatory And Insulinemic Potential Of Diet And Lifestyle With Risk Of Hepatocellular Carcinoma*". **Dr Zhang** also presented at the minisymposium, *New Insight from Classic Epidemiologic Factors* at the 2020 AACR Annual Meeting (6/22-24). The title of his presentation was "*Brisk walking and hepatocellular carcinoma risk in US men and women*".

Its related paper, first-authored by **Dr Xiao Luo**, Postdoctoral Research Fellow in the department of Nutrition, was recently published.

Luo X, Yang W, Ma Y, Simon TG, Meyerhardt JA, Chan AT, Giovannucci EL*, Zhang X*. Physical Activity and Risk of Hepatocellular Carcinoma Among U.S. Men and Women. *Cancer Prev Res (Phila)*. 2020 Apr 20. doi: 10.1158/1940-6207.CAPR-19-0447. Online ahead of print. PMID: 32312712 *co-senior authorship.

Dr Frank Qian, Visiting Scientist, and colleagues presented a talk titled "*Pre-pregnancy plant-based diet and the risk of gestational diabetes mellitus: a prospective cohort study*" recently at the 80th American Diabetes Association Scientific Sessions.

Healthy plant-based diets prior to pregnancy may help lower the risk of gestational diabetes, data from a large, prospective cohort study indicate. According to Qian, "From these results, we can say that a pre-pregnancy plant-based diet, particularly one that also limits unhealthful plant-based foods such as refined grains, potatoes, and sugar-sweetened foods and beverages, may be associated with a lower risk of gestational diabetes."

Their talk was featured in a news report on **Medscape** (https://www.medscape.com/viewarticle/932548#vp_1).

The authors are as follows: **Zhangling Chen**, **Frank Qian**, **Gang Liu**, Mengying Li, Trudy Voortman, **Deirdre Tobias**, Sylvia Ley, **Shilpa N Bhupathiraju**, Lingjun Li, **Jorge E. Chavarro**, **Qi Sun**, **Frank B Hu**, Cuilin Zhang

STUDENT NEWS

Dr. Erica Kenney, Assistant Professor of Public Health Nutrition, and doctoral students **Hannah Cory** and **Mary Kathryn Poole** recently published findings for how the 2017 revisions to the Child and Adult Care Food Program (CACFP) have impacted family child care home providers in Boston.

Kenney EL, Poole MK, Cory H, Cradock AL. Impact of changes to the Child and Adult Care Food Program on children's dietary intake in family child care homes. *Public Health Nutrition*. Published online April 17, 2020:1-8. doi:10.1017/S1368980019004646.

Poole MK, Cradock AL, Kenney EL. Implementing the New Child and Adult Care Food Program's Nutrition Standards in Boston. *Prev Chronic Dis* 2020;17:190426. DOI: <https://doi.org/10.5888/pcd17.190426>.

Recent graduate **Simone Passarelli** will be starting on the Nutrition Department's T32 training grant at the end of July as a postdoctoral fellow under the joint mentorship of **Drs. Christopher Golden**, Assistant Professor of Nutrition and Planetary Health, and **Christopher Duggan**, Professor in the Department of

Nutrition. Her research will build upon Dr. Golden's current projects in Kiribati exploring the interplay between environmental and economic transitions and nutrition outcomes, in addition to other emerging work pertaining to planetary health and human nutrition.

In spite of the many challenges posed by the current COVID-19 crisis, all of our MPH students have successfully secured practicum experiences for the summer.

NEW PEOPLE IN THE NUTRITION DEPARTMENT!



Elizabeth Burkley
Research Assistant

Hello there! My name is Lauren but I go by Elizabeth (Eliz) at HSPH. I've spent the past two years working part-time as a Diet Technician in the Nutrition Questionnaire Service Center. I graduated from the University of Alabama with a BS in Food and Nutrition and recently finished my MS at Framingham State University. I've been in school the past 8 years so I am very excited to jump start my professional career!

I've accepted a full-time position working as a Research Assistant for the Nutrition Department. I will continue processing FFQ's as well as help maintain the nutrient database. I plan to sit for my RD exam this Fall. Lots of studying to do! In my free time, I love taking my dog Millie on field trips to various trails and parks. Now that I'm out of school, I have the time to pick up old

hobbies. I look forward to reading novels instead of textbooks, refinishing furniture and crafting!!

Looking forward to meeting everyone, whether online or in the office!

Dr. Tian-Shin Yeh
Postdoctoral Fellow

Dr. Yeh is a physician from Taiwan. She received her MD and Master of Medical Science degree in Taiwan, and her PhD in Population Health Sciences in Clinical Epidemiology from the Harvard T.H. Chan School of Public Health in May 2020. Her dissertation, mentored by ***Drs. Walter Willett, Deborah Blacker, Alberto Ascherio, and Bernard Rosner***, focused on the associations between long-term diet and cognitive function. Dr. Yeh would like to express her deepest gratitude to all mentors for their wisdom, inspiration, and consistent support during her doctoral journey.



She is also very grateful to her postdoctoral supervisors—***Drs. Walter Willett, Alberto Ascherio, and Marc Weisskopf***—for giving her the exciting opportunity to enhance knowledge and research skills and to lay a solid foundation for her future career as an independent physician scientist. Her research will focus on diet/risk factors and biomarkers of neurodegenerative diseases and cognitive decline.

Dr. Yeh feels very honored and delighted to join the department of nutrition. In her spare time, she enjoys exercise, music, movies, healthy foods, and time with family and friends.

NUTRITION RESEARCH NEWS

Variety of Healthy Eating Patterns Now Associated with Lower Heart Disease Risk

According to new research published in ***JAMA Internal Medicine***, a greater adherence to a variety of healthy eating patterns was associated with a lower risk of cardiovascular disease (CVD). These findings lend support for the 2015-2020 Dietary Guidelines for Americans, which focus on healthy eating patterns vs individual ingredients and nutrients to better account for diverse cultural and personal food traditions and preferences.

Dr Zhilei Shan, first author on the paper and a research associate in the Department of Nutrition, said “Although each healthy eating pattern represents a different combination of dietary constituents, our study indicates that greater adherence to any of the four healthy eating patterns we looked at is associated with lower risk of cardiovascular disease and the health benefits persist across racial and ethnic groups”.

This study is important because so far few studies have examined how adhering to recommended healthy eating patterns influence long-term risk of CVD. The researchers focused on dietary scores for four healthy eating patterns: Healthy Eating Index-2015 (HEI-2015); Alternate Mediterranean Diet Score (AMED); Healthful Plant-Based Diet Index (HPDI); and Alternate Healthy Eating Index (AHEI). Results indicate that despite different scoring methods, each of these patterns emphasizes higher intake of whole grains, vegetables, fruits, legumes, and nuts, and lower intake of red and processed meats and sugar-sweetened beverages.

In order to assess the associations of each pattern with CVD risk, Shan and colleagues looked at data from 74,930 women enrolled in the Nurses’ Health Study, 90,864 women in the Nurses’ Health Study II, and 43,339 men in the Health Professionals Follow-Up Study. They asked participants in each study every 2-4 years about their dietary habits, including how often, on average, they consumed a standard portion size of various foods.

Their analysis found that greater adherence to any of the healthy eating patterns was consistently associated with lower risk of CVD. The findings also showed that these different healthy eating patterns were similarly effective at lowering CVD risk across racial and ethnic groups and other subgroups studied, and that they were statistically significantly associated with lower risk of both coronary heart disease and stroke.

Corresponding author **Dr Frank Hu**, Fredrick J. Stare Professor of Nutrition and Epidemiology and chair of the Department of Nutrition, stated that “These data provide further evidence to support current dietary guidelines that following healthy eating patterns confers long-term health benefits on cardiovascular disease prevention. There is no one-size-fits-all diet that is best for everyone. One can combine foods in a variety of flexible ways to achieve healthy eating patterns according to individuals’ health needs, food preferences, and cultural traditions.”

“Association Between Healthy Eating Patterns and Risk of Cardiovascular Disease,” **Zhilei Shan; Yanping Li, Megu Y. Baden, Shilpa N. Bhupathiraju, Dong D. Wang, Qi Sun**, Kathryn M. Rexrode, **Eric B. Rimm**, Lu Qi, **Walter C. Willett**, JoAnn E. Manson, Qibin Qi, **Frank B. Hu**. *JAMA Internal Medicine*, June 15, 2020, doi: 10.1001/jamainternmed.2020.2176

Visit the Harvard Chan School website for the [latest news](#), [press releases](#), and [multimedia offerings](#).

Recruitment Process Completed in PREDIMAR Study

The recruitment process in the PREDIMAR study has been completed with a total of 720 participants. The aim of this trial is the secondary prevention (recurrence) of atrial fibrillation in patients after an ablation. **Drs Miguel Martínez González**, Adjunct Professor of Nutrition, and **Miguel Ruiz-Canela** are members of the steering committee of this new trial with Jesús Almendral y and Teresa Barrio, two cardiologists from Hospital Montepíncipe in Madrid. More than 80% of participants have already been followed for 1 year and it is expected that all participants will finish the 2-year follow-up by January 2022. PREDIMAR-OMICS is a continuation of this project. It has recently received funding for a pilot proteomic study and it has submitted a new project to combine metabolomic and genomic data, and to observe the recurrence of atrial fibrillation after 4 years of follow-up.

MONDAY NUTRITION SEMINARS

The Department of Nutrition holds its weekly **Monday Nutrition Seminar Series** every Monday throughout the academic year. The talks are varied, but they highlight the many different aspects of cutting-edge research that is currently being conducted in the fields of nutrition and global public health. These seminars are held from **1:00-1:20 pm** and are free and open to the public. Because of COVID-19, the seminars have been presented via Zoom since March of this past spring, and this zoom format will continue in the fall of 2020. A zoom link for viewing will be available one week prior to each seminar.

Our Monday Nutrition Seminar Series will resume on August 31, 2020.

NUTRITION SOURCE UPDATES

Summer picnic tips

Although summer 2020 is heating up, unfortunately there's no playbook for picnicking during a pandemic. Keeping activities within your own household—and to your own backyard—is likely the safest option. Along with tips and recipes for safe and healthy summer meals, here are some additional precautions to consider if you open up your gathering to guests:

<https://www.hsph.harvard.edu/nutritionsource/healthy-summer-picnic-tips/>

If you would like to remain current as to what is happening in the field of nutrition, please be sure to view our Nutrition Source website for the latest updates!

(See: <https://www.hsph.harvard.edu/nutritionsource/>)

RECIPE CORNER

Arugula, watermelon, feta, and mint salad with balsamic vinaigrette



Recipe courtesy of Dr Guy Crosby via *The Nutrition Source*

Serves 4

Ingredients:

- 3 ounces fresh arugula leaves
- 4 cups watermelon, cut into 1-inch pieces
- 1 tablespoon fresh mint leaves, finely chopped
- 3 1/2 ounces feta cheese
- 2 tablespoons balsamic vinaigrette

Preparation:

1. For vinaigrette, combine 1 tablespoon of aged balsamic vinegar, 3 tablespoons of extra-virgin olive oil, and ½ teaspoon of mayonnaise in a small bowl. Whisk mixture vigorously to form stable emulsion.
2. To start salad, cut watermelon into 1-inch pieces and drain for 15 minutes.
3. Tear arugula into bite-sized pieces and place in large salad bowl.
4. Add chopped mint to arugula and mix thoroughly.
5. Add drained watermelon to bowl.
6. Crumble feta cheese on top of mixture.
7. Season with salt and pepper.
8. Toss lightly with desired amount of balsamic vinaigrette.

HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH

Surfacing solutions to global public health problems.

Coming up at The Forum

Tuesday, June 30, 2020



Image credit: iStock/SyhinStas

Q&A

Food Insecurity, Inequality and COVID-19

Presented jointly with  **The World** 

Live Q&A will stream on [Facebook](#) and on [The Forum](#) site, Tuesday, June 30, 2020 12 PM ET

There is no registration required to watch the event online.

Send questions for the panelists in advance or during the Q&A: theforum@hsph.harvard.edu or post them to [@ForumHSPH](#) or [@pritheworld](#)

We will post the video later on demand on:

- [YouTube](#)
- [The Forum website](#)

COVID-19: Coronavirus Disease 2019

Harvard Medical School Module 1: From Bench to Bedside Graphic Summary

VIROLOGY

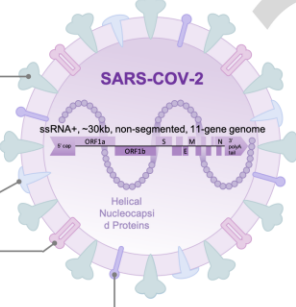
SARS-CoV-2 is a new virus belonging to the Coronavirus family, which includes less pathogenic strains responsible for the common cold, as well as the viruses responsible for SARS and MERS. It is genetically related to the coronavirus responsible for the SARS outbreak in 2003; the closest identified relative was isolated from bats.

- Spike (S) glycoprotein**
 - Trimeric structure resembling corona or crown
 - Responsible for receptor binding, membrane fusion, and hemagglutinin activity
 - Target for eliciting host neutralizing antibody
 - Unique SARS-CoV-2 polymorphism enables S activation by human furin protein (found in lungs, liver, and small intestine), which may explain the association of COVID-19 with liver failure

Hemagglutinin-esterase (HE) protein

- Matrix (M) transmembrane glycoprotein**
 - Most abundant structural protein
 - Determines shape of viral envelope

- Envelope (E) protein**
 - Interacts with M to form viral envelope
 - Important for virus infectivity



Transmission

- SARS-CoV-2 is spread primarily via droplet, though it can be aerosolized and can persist on plastic and stainless steel surfaces for up to 72h
- Disinfectants with commercial concentrations of EtOH or H₂O₂ are effective

PATHOPHYSIOLOGY

Type I Pneumocyte

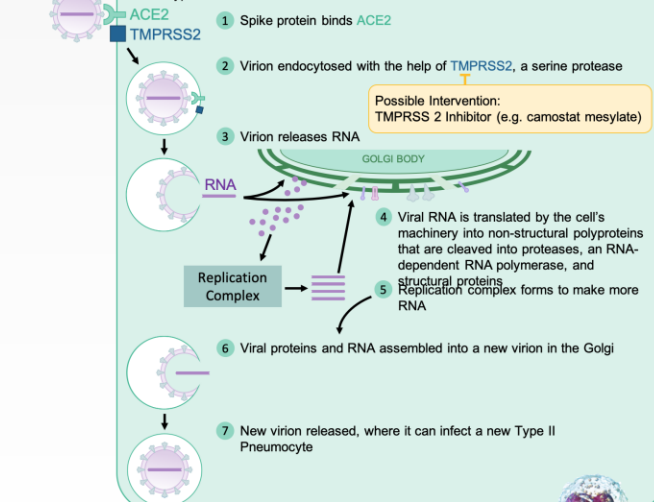
- Simple squamous epithelial cell
- 97% of alveolar epithelium
- Thin, ideal for blood-gas barrier to adjacent pulmonary capillary endothelium

Type II Pneumocyte

- Cuboidal epithelial cell
- 3% of alveolar epithelium
- Secrete pulmonary surfactant to decrease lung surface tension
- Act as alveolar epithelial stem cells, proliferating in settings of lung inflammation and damage
- Express **Angiotensin Converting Enzyme 2 (ACE2)** which is implicated in the Renin-Angiotensin-Aldosterone System and the pathogenesis of hypertension

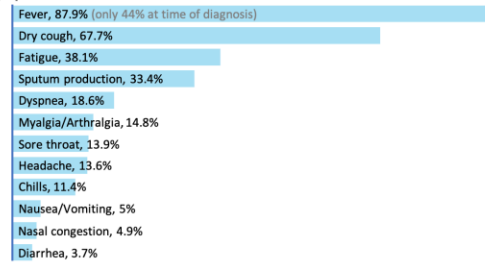
ALVEOLUS

SARS-COV-2



CLINICAL

Symptoms



Risk stratifying factors:

- Cardiovascular disease
- Hypertension
- Diabetes
- Chronic Respiratory Disease
- Cancer (any)
- Elderly, generally >60y
- Immunocompromised status

Full mechanisms not yet known

Partially mediated by:
ACE Inhibitor use
Angiotensin II Receptor Blocker use
Thiazolidinedione use
Ibuprofen use

Upregulation of ACE2 Receptor

Increased viral susceptibility

Diagnostic testing

- Currently a syndromic diagnosis of COVID-19 while awaiting definitive microbiological diagnosis
- RT-PCR against SARS-CoV-2 transcripts is the current gold standard diagnostic
 - High specificity
 - Variable sensitivity based on testing kit
- Serological antibody tests are in development and may detect both active and prior infection

Laboratory Findings



- Common findings: lymphocytopenia (most common laboratory finding), thrombocytopenia, leukopenia, TCRP
- Less common findings: TAST, TALT, TCK, TD-dimer
- In severe cases: Ttroponin, Tmyoglobin, TIL-6, Tprocalcitonin, TLDH, Talbumin

Imaging

- Imaging is not recommended for screening, but common chest CT findings include ground-glass opacities, consolidation, and crazy paving patterns, in a bilateral peripheral distribution

Clinical Course

- Clinical outcomes: mild disease, pneumonia, severe pneumonia, acute respiratory distress syndrome (ARDS), septic shock
- Case fatality rate (CFR) estimated at 2%, but given that many mild cases have gone undiagnosed, CFR is likely lower

Investigational Treatment

- There are currently no FDA-approved treatments directed against COVID-19 at this time (03.19.20). However, a variety of therapies are under investigation. These include repurposing of
 - Antivirals: remdesivir, lopinavir/ritonavir
 - Antimalarials: chloroquine/hydroxychloroquine
 - Immunosuppressive medications: tocilizumab
 - Transfusing antibodies against SARS-CoV-2 analogs/SARS-CoV

Investigational Prevention

- It is expected that COVID-19 vaccine development will take a minimum of one year

Immune Response

Innate Immune System

- Delayed or suppressed Type I Interferon (IFN) response during initial infection
- Viral replication triggers hyperinflammatory conditions and cytokine storm
- Influx of activated neutrophils and inflammatory monocytes/macrophages
- Serum neutrophilia and elevated pro-inflammatory cytokines are associated with severity of disease

Adaptive Immune System

- T helper cells Th1/Th17 are induced
- Specific antibodies not yet established
- Serum lymphopenia may be related to an antiviral response of bone marrow suppression

Treatment

	SYMPTOMS	MANAGEMENT
MILD	<ul style="list-style-type: none"> Subjective or low-grade fever Dry cough Myalgias and arthralgias Nasal congestion Headache Sore throat 	<ul style="list-style-type: none"> 14d home quarantine Return precautions Supportive care: encourage eating and drinking, acetaminophen for comfort/fever Avoid or be cautious with ibuprofen
MODERATE	<ul style="list-style-type: none"> High-grade temperatures Shortness of breath/ trouble breathing especially if involving the need for supplemental oxygen Chills Profound fatigue 	<ul style="list-style-type: none"> Airborne isolation Supportive care: conservative fluid management, acetaminophen for comfort/fever Respiratory support Treat comorbidities: <ul style="list-style-type: none"> Suspected sepsis: empiric antibiotics Flu: oseltamivir Asthma/COPD: bronchodilators
SEVERE	<ul style="list-style-type: none"> Severe dyspnea Hypoxia Dehydration 	<ul style="list-style-type: none"> As above plus: Advanced ventilatory support

tinyurl.com/MedStudentCOVID19Curriculum | tinyurl.com/MedStudentCOVID19Graphic

Figures not to scale. | Current as of 03.19.2020. | Please see bibliography in written module.

Student authors: Adi Achanta; Kendall Carpenter; Pamela Chen; Nicole Gilette; Pinky Langat, PhD; Blake Oberfeld; Jordan Said; Simone Sasse; Abigail Schiff, PhD; and Allen Zhou | Graphic by Blake Oberfeld