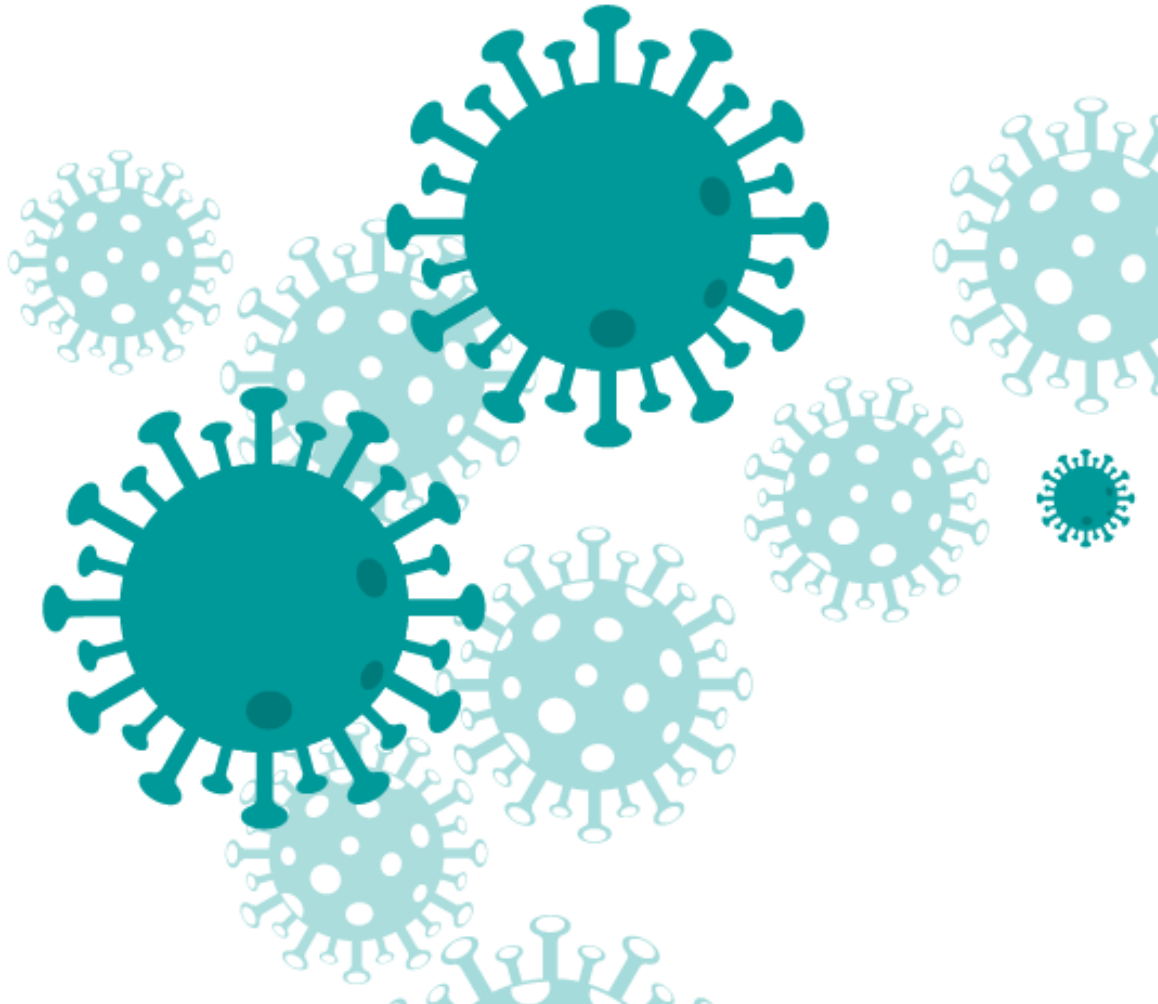
The Impact of COVID-19 on our Healthcare System and Community

A Community Health Forum

June 2, 2020 | 8:30 am – 10:30 am



Kentuckiana Health Collaborative

Building a Bridge to Better Health, Better Care and Better Value

LOGISTICS

Natalie Middaugh, MPH, CHES

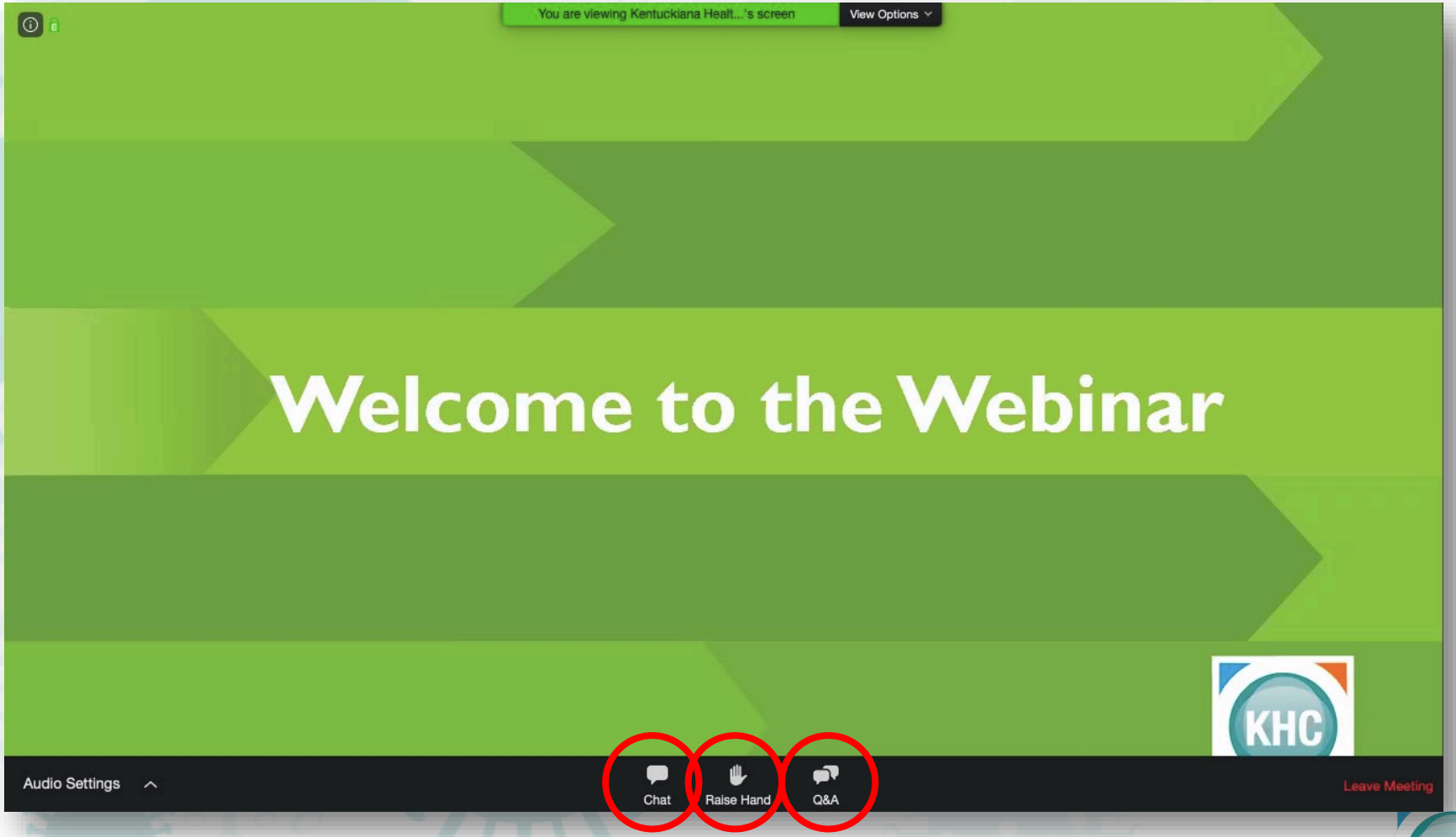
Community Health Program Manager,
Kentuckiana Health Collaborative

ATTENDEE SCREENVIEW

Select "Q&A" to type a question and submit it to the host and speaker.

Select "Chat" to send a message to other attendees.

Select "Raise Hand" to ask a question.



LOGISTICS

Access event materials
on the KHC COVID-19 Resources Page

KHCollaborative.org/initiatives/covid19

LOGISTICS

Social Media

Twitter: @KHCollaborative

LinkedIn: www.linkedin.com/company/Kentuckiana-Health-Collaborative

Facebook: www.facebook.com/KentuckianaHealthCollaborative

#KHC

WELCOMING REMARKS

Randa Deaton, MA

President and CEO | Kentuckiana Health Collaborative

AGENDA

8:32.....Current State of COVID-19 Pandemic in Kentuckiana

8:40.....COVID-19 Public Health: Short- and Long-Term Impact on Public Health

8:50.....Healthcare in the COVID-19 Era

9:50.....COVID-19 Testing: Moving from the Wild, Wild, West to Evidence-Driven Approaches

10:15...Breakthrough Treatment for Coronavirus: Where are We?

10:25...Closing

Current State of COVID-19 Pandemic in Kentuckiana

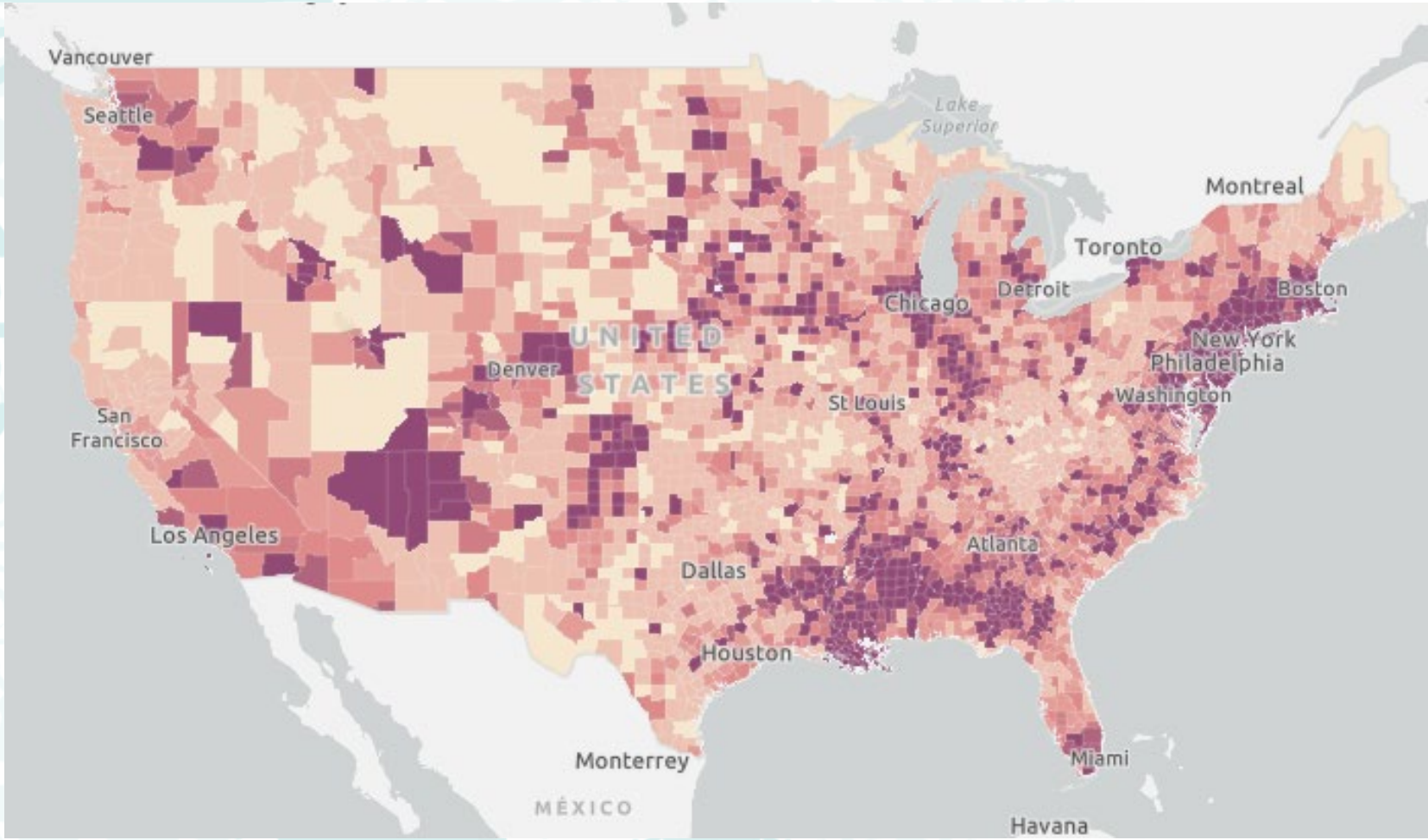
Stephanie Clouser, MSA
Data Scientist
KHC

Natalie Middaugh, MPH, CHES
Community Health Program Manager
KHC

Coronavirus in the U.S.

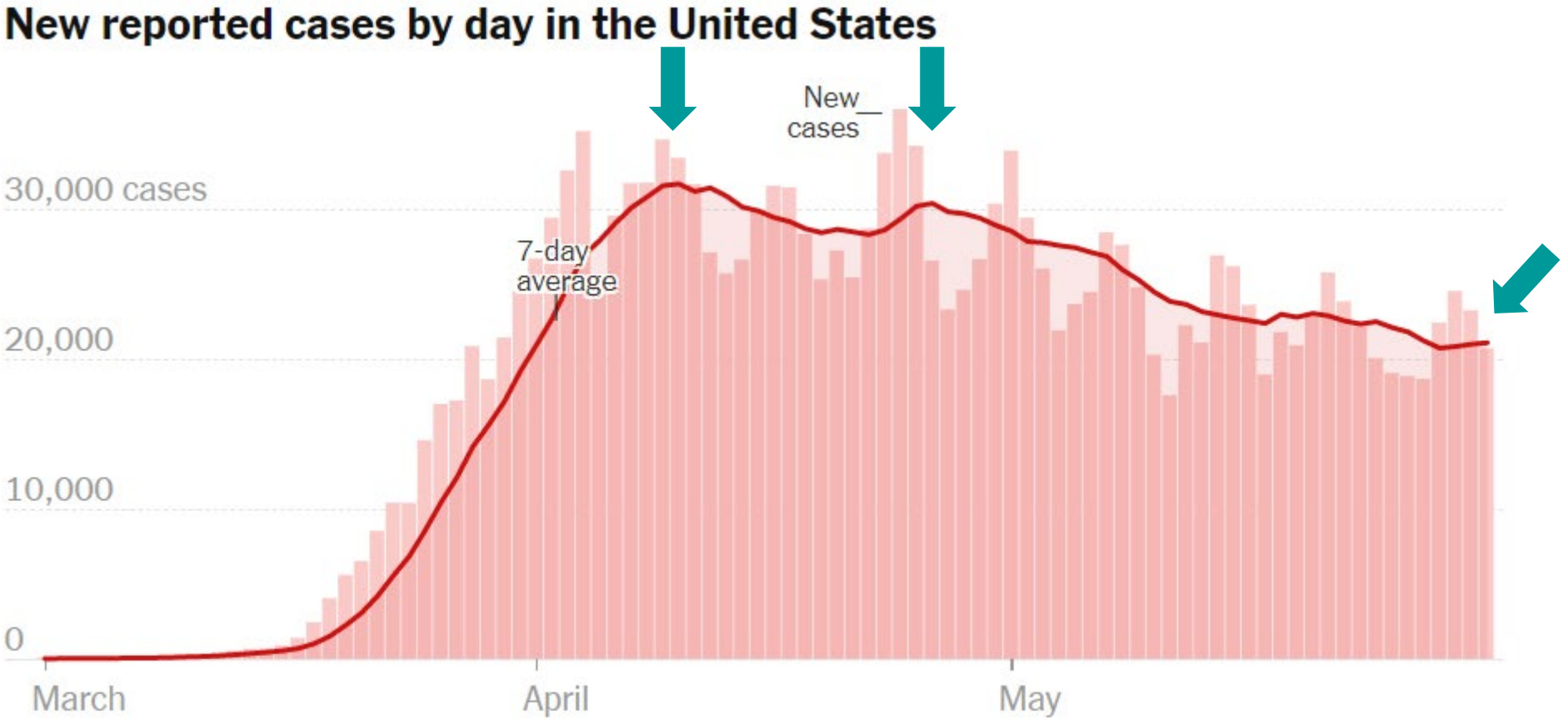
U.S. Total Cases: 1.8 million
U.S. Total Deaths: 104,000+

U.S. Total Cases Per 100,000: 550



Source: Johns Hopkins University & Medicine Coronavirus Resource Center

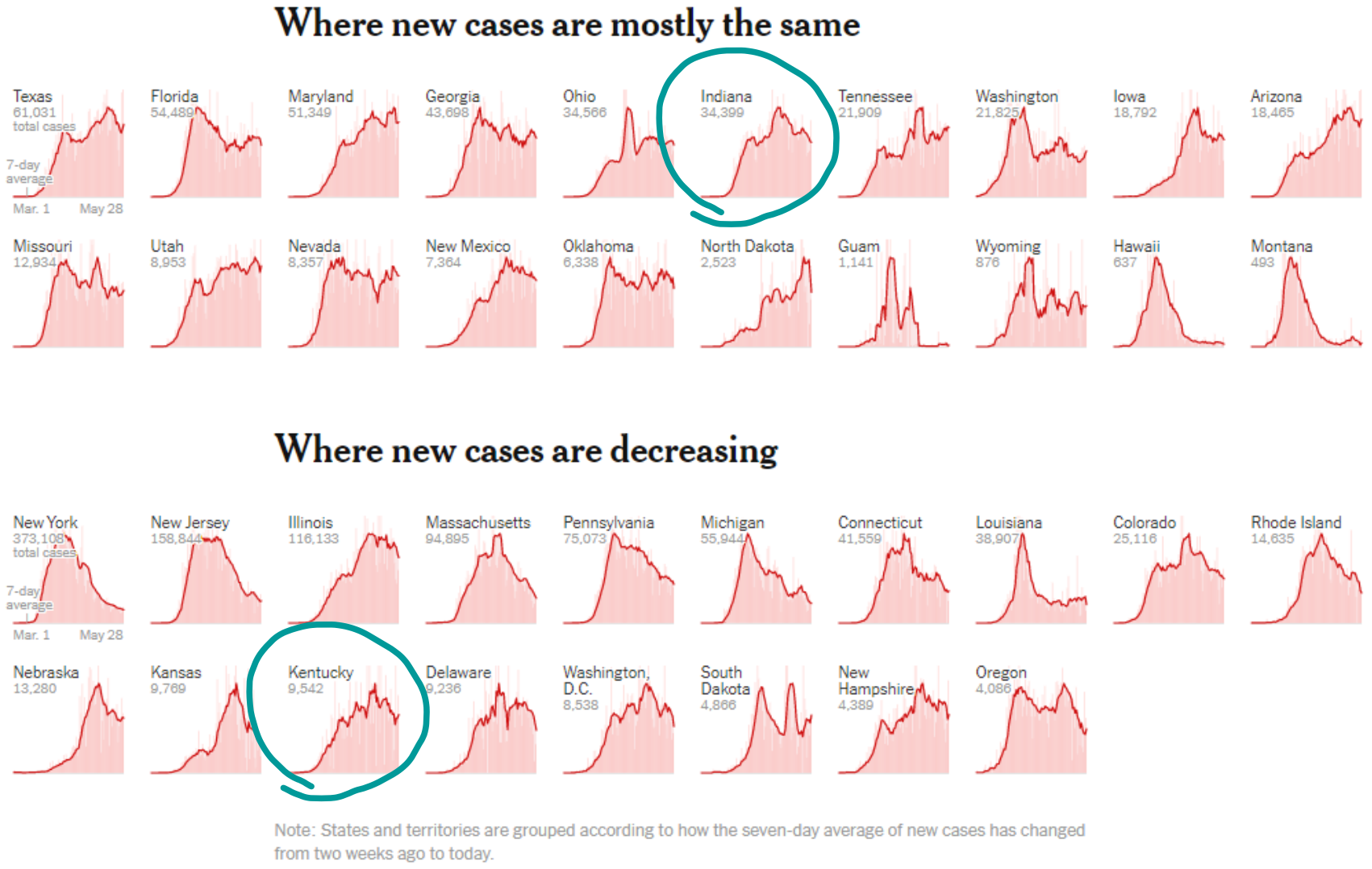
Coronavirus in the U.S.



Note: The seven-day average is the average of a day and the previous six days of data.

Source: The New York Times, “Coronavirus in the U.S.: Latest Map and Case Count”

Coronavirus in the U.S.



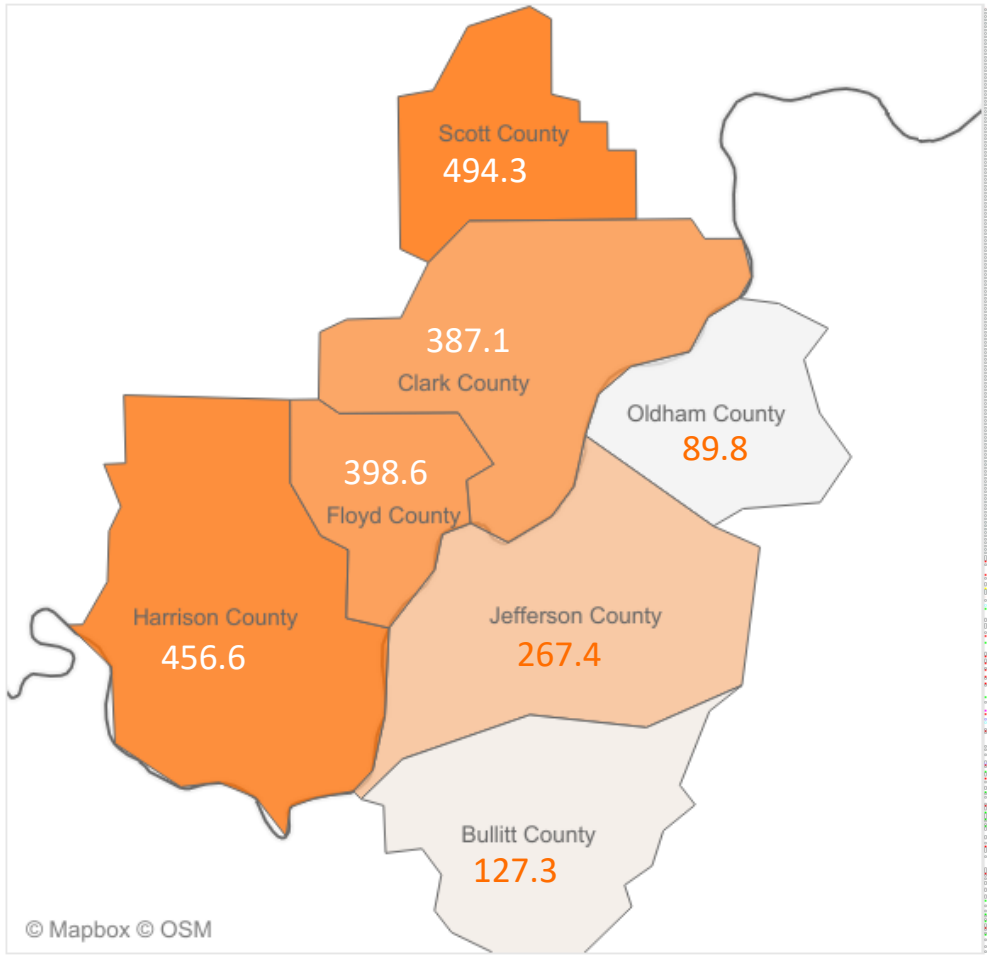
Source: The New York Times, “Coronavirus in the U.S.: Latest Map and Case Count”

Coronavirus in Kentuckiana

Total Cases:
3754

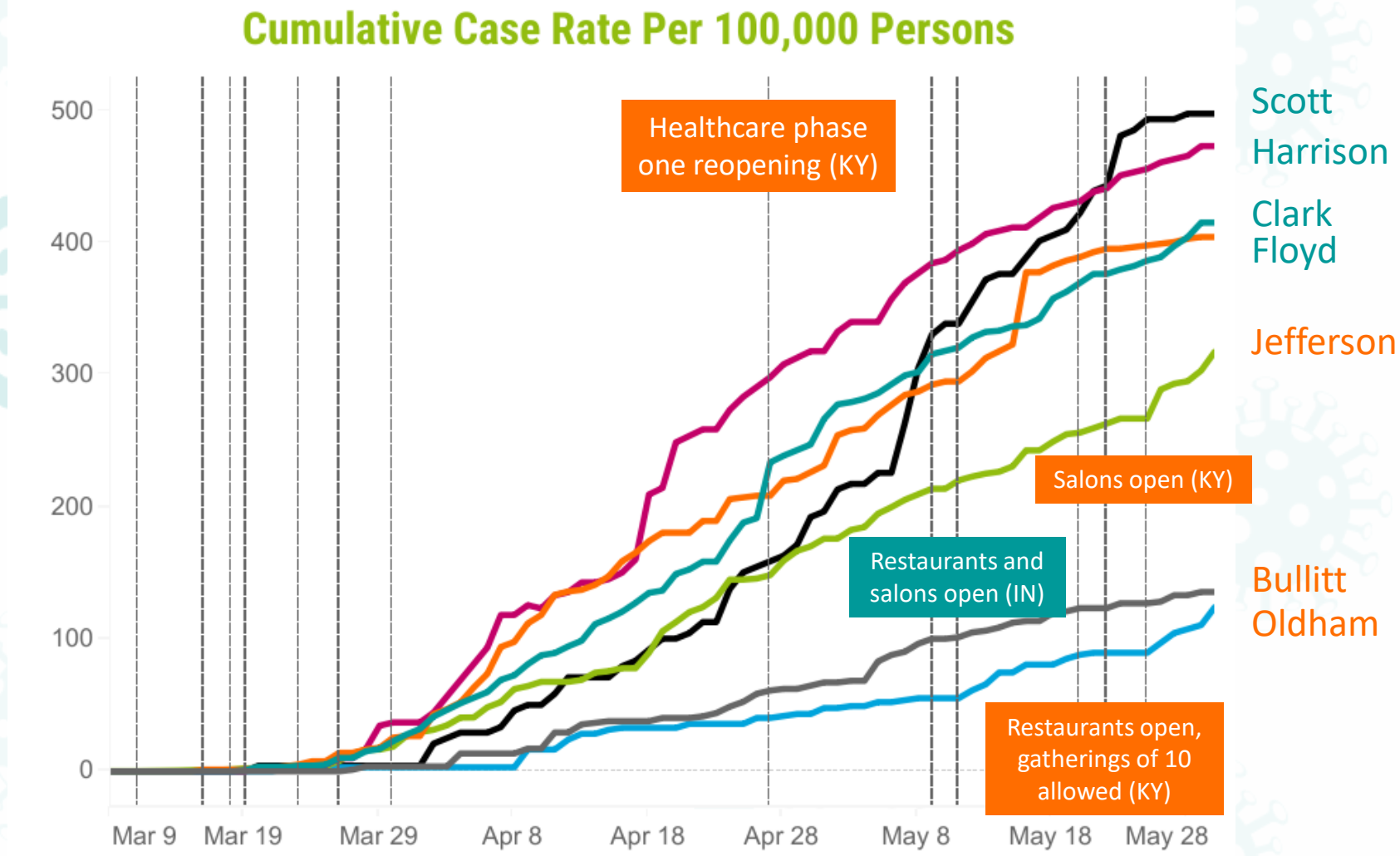
Kentuckiana Cases Per Capita: 319

U.S. Total Cases Per Capita: 550



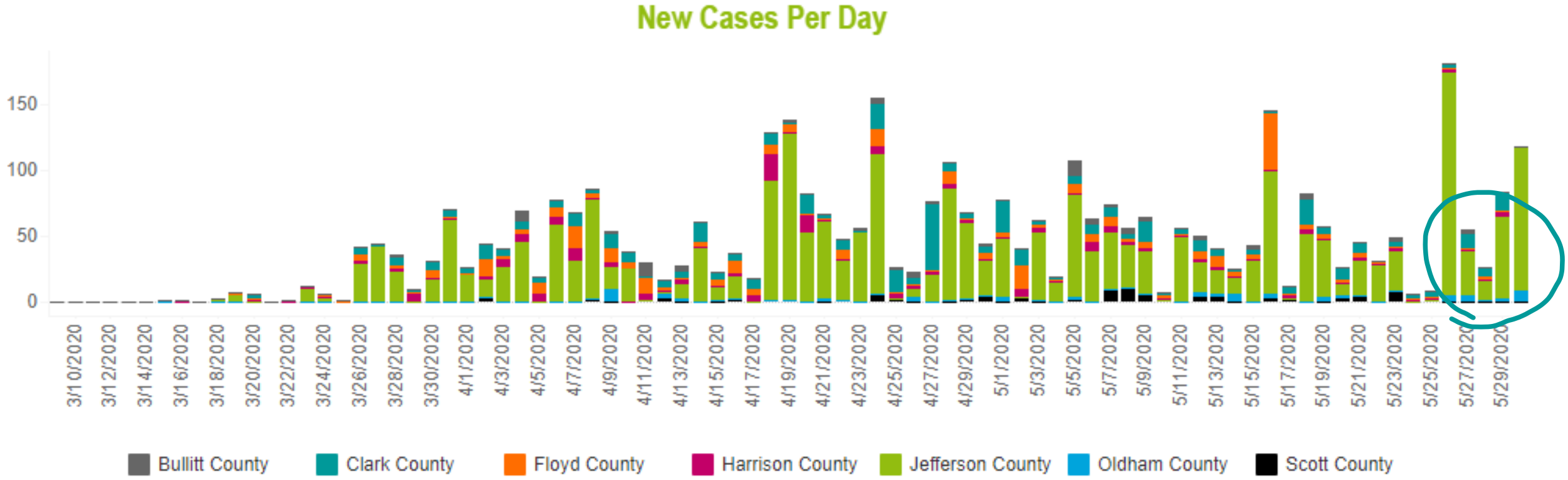
Source: KHC COVID-19 Resources Page (data: USA Facts, CDC)

Coronavirus in Kentuckiana



Source: KHC COVID-19 Resources Page (data: USA Facts, CDC)

Coronavirus in Kentuckiana

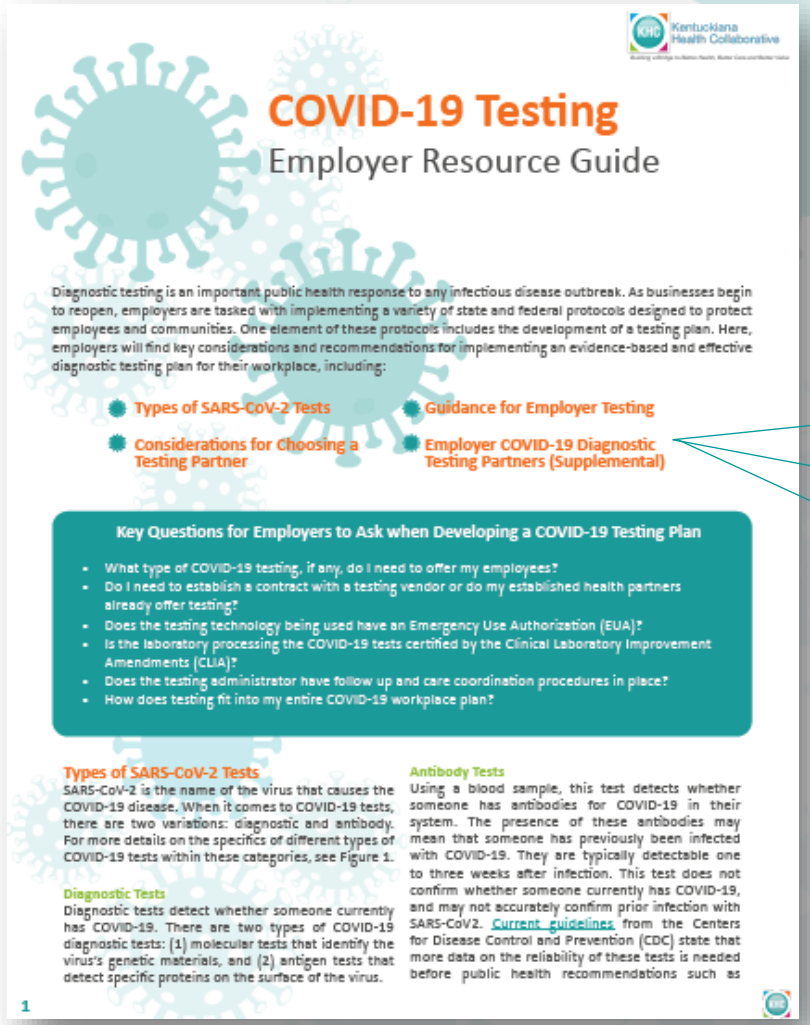


Source: KHC COVID-19 Resources Page (data: USA Facts, CDC)

COVID-19 Spread and Response

Factors Contributing to Acceleration	Public Health Response
Travel-associated importations of the virus	Travel health notices, traveler screening travel restrictions, isolation and quarantine orders, symptom and evaluation education
Large gatherings	Restricting mass gatherings; global travel restrictions and domestic travel recommendations, recommending transition to virtual events
Introductions into high-risk workplaces/settings	Restricting visitation, cohort units or facilities for residential settings, vigorous contact tracing around, confirmed cases, infection control, environmental surface cleaning, personal protective equipment
Crowding and high population density	Stay-at-home orders, hand washing and social distancing, cloth face covering guidance, school dismissals, extended telework, environmental surface cleaning
Cryptic transmission	Testing, surveillance, cloth face covers, contact tracing accompanied by quarantine and/or testing of asymptomatic contacts, stay-at-home orders

Schuchat A. Public Health Response to the Initiation and Spread of Pandemic COVID-19 in the United States, February 24–April 21, 2020. MMWR Morb Mortal Wkly Rep 2020;69:551–556. DOI: http://dx.doi.org/10.15585/mmwr.mm6918e2external icon



COVID-19 Testing

Employer Resource Guide

Diagnostic testing is an important public health response to any infectious disease outbreak. As businesses begin to reopen, employers are tasked with implementing a variety of state and federal protocols designed to protect employees and communities. One element of these protocols includes the development of a testing plan. Here, employers will find key considerations and recommendations for implementing an evidence-based and effective diagnostic testing plan for their workplace, including:

- Types of SARS-CoV-2 Tests
- Guidance for Employer Testing
- Considerations for Choosing a Testing Partner
- Employer COVID-19 Diagnostic Testing Partners (Supplemental)

Key Questions for Employers to Ask when Developing a COVID-19 Testing Plan

- What type of COVID-19 testing, if any, do I need to offer my employees?
- Do I need to establish a contract with a testing vendor or do my established health partners already offer testing?
- Does the testing technology being used have an Emergency Use Authorization (EUA)?
- Is the laboratory processing the COVID-19 tests certified by the Clinical Laboratory Improvement Amendments (CLIA)?
- Does the testing administrator have follow up and care coordination procedures in place?
- How does testing fit into my entire COVID-19 workplace plan?

Types of SARS-CoV-2 Tests

SARS-CoV-2 is the name of the virus that causes the COVID-19 disease. When it comes to COVID-19 tests, there are two variations: diagnostic and antibody. For more details on the specifics of different types of COVID-19 tests within these categories, see Figure 1.

Diagnostic Tests

Diagnostic tests detect whether someone currently has COVID-19. There are two types of COVID-19 diagnostic tests: (1) molecular tests that identify the virus's genetic materials, and (2) antigen tests that detect specific proteins on the surface of the virus.

Antibody Tests

Using a blood sample, this test detects whether someone has antibodies for COVID-19 in their system. The presence of these antibodies may mean that someone has previously been infected with COVID-19. They are typically detectable one to three weeks after infection. This test does not confirm whether someone currently has COVID-19, and may not accurately confirm prior infection with SARS-CoV2. Current guidelines from the Centers for Disease Control and Prevention (CDC) state that more data on the reliability of these tests is needed before public health recommendations such as

1

- **Types of SARS-CoV-2 Test**
- **Guidance for Employer Testing**
- **Considerations for Choosing a Testing Partner**

https://www.khcollaborative.org/initiatives/covid19/

COVID-19 Public Health: Short- and Long-Term Impact on Public Health

Sarah Moyer, MD

Director | Louisville Metro Department of Public Health and Wellness

Chief Health Strategist | City of Louisville

HEALTHCARE IN THE COVID-19 ERA

MODERATOR

Mike Thompson

CEO

National Alliance of Healthcare Purchaser Coalitions

Jenny Goins

Commissioner, Department of Employee Insurance | KY Personnel Cabinet

Mike Lorch

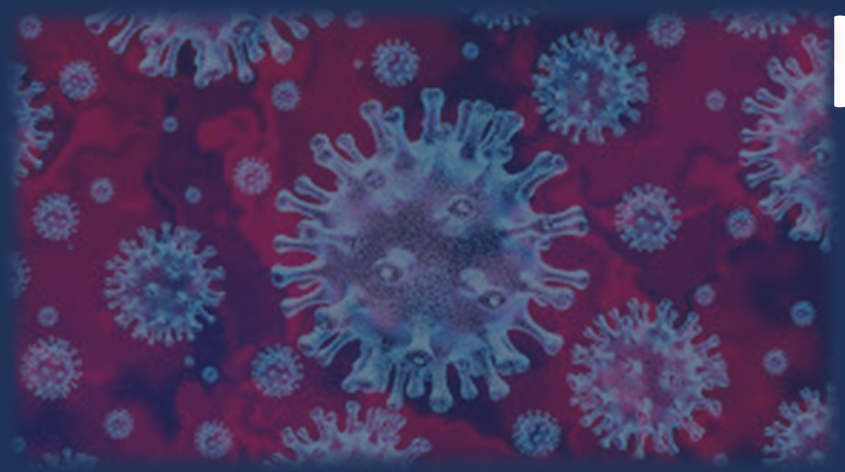
Regional Vice President| Anthem Blue Cross Blue Shield of Kentucky

DeAnna Hall, RN

Manager Corporate Health and Wellness | LG&E/KU

Larry Gray, MHA

President | Baptist Health Louisville



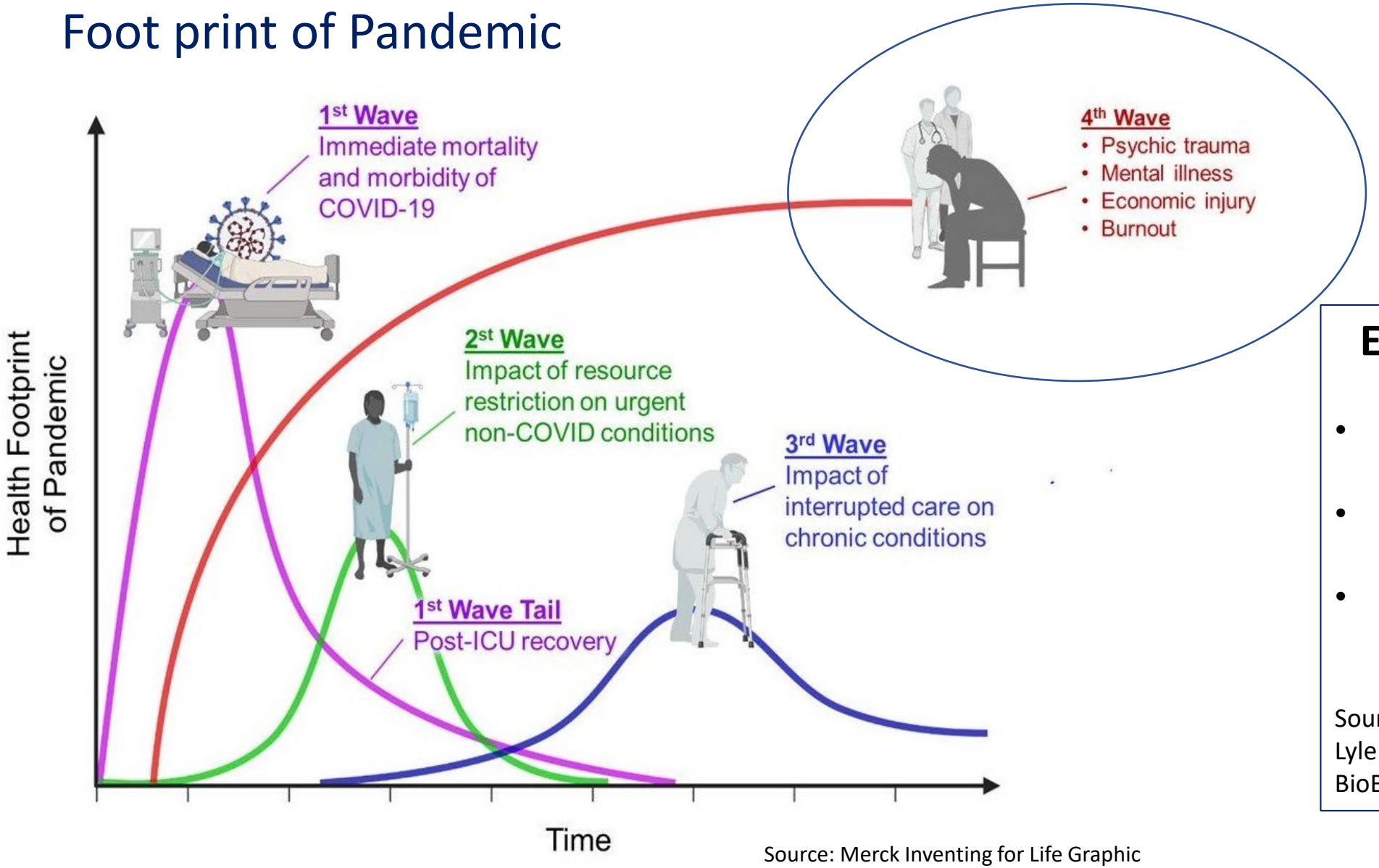
Healthcare in the Covid-19 Era

June 2, 2020

KHC Community Heath Forum

National Alliance
of Healthcare Purchaser Coalitions
Driving Innovation, Health and Value

Foot print of Pandemic



Source: Merck Inventing for Life Graphic

Economics of Stress

- Demands & Pressures are "Additive & Cumulative"
- Coping Skills (resilience) predict 16% of outcomes
- Demands & pressures predict 60% of outcomes

Source:
Lyle Miller, PhD
BioBehavioral Institute of Boston

Emotional & Population Health

- Mental health - the next wave of Covid-19
  - Consider all the elements of wellbeing – social, sleep, connectivity, etc.
  - Direct and indirect impact of social isolation
  - Growing impact on substance use disorder

- Special populations
  - Cultural and ethnic differences
  - High risk populations – Age, Chronic Disease, Minorities, Social Determinants
  - Others – eg Those who are pregnant

- Impact of virtual health support

- Re-engaging on-site/near-site clinics

Economic Stress

Worrying about (or losing) their jobs or income

Fear of COVID-19

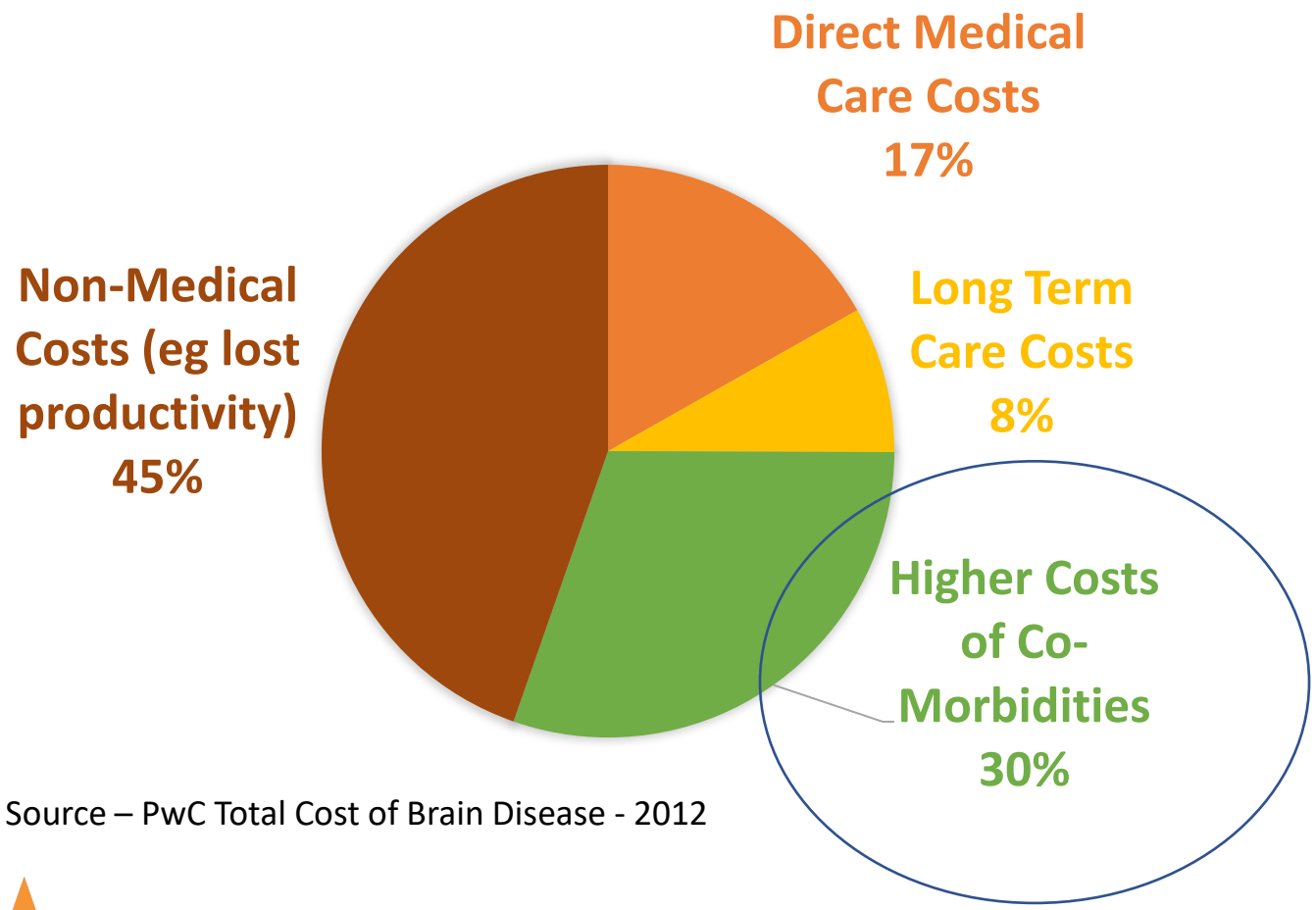
Especially those working at workplace

Social Isolation

Especially for those working from home

National Alliance of Healthcare Purchaser Coalitions
Driving Innovation, Health and Value

Costs of Mental Health Co-Morbidity



Source – PwC Total Cost of Brain Disease - 2012

Will we experience this?
Better or worse?

Costs of person with a chronic disease only

2.5x

Cost of person with a chronic disease and behavioral health

9.4x

Source: Livongo 2019

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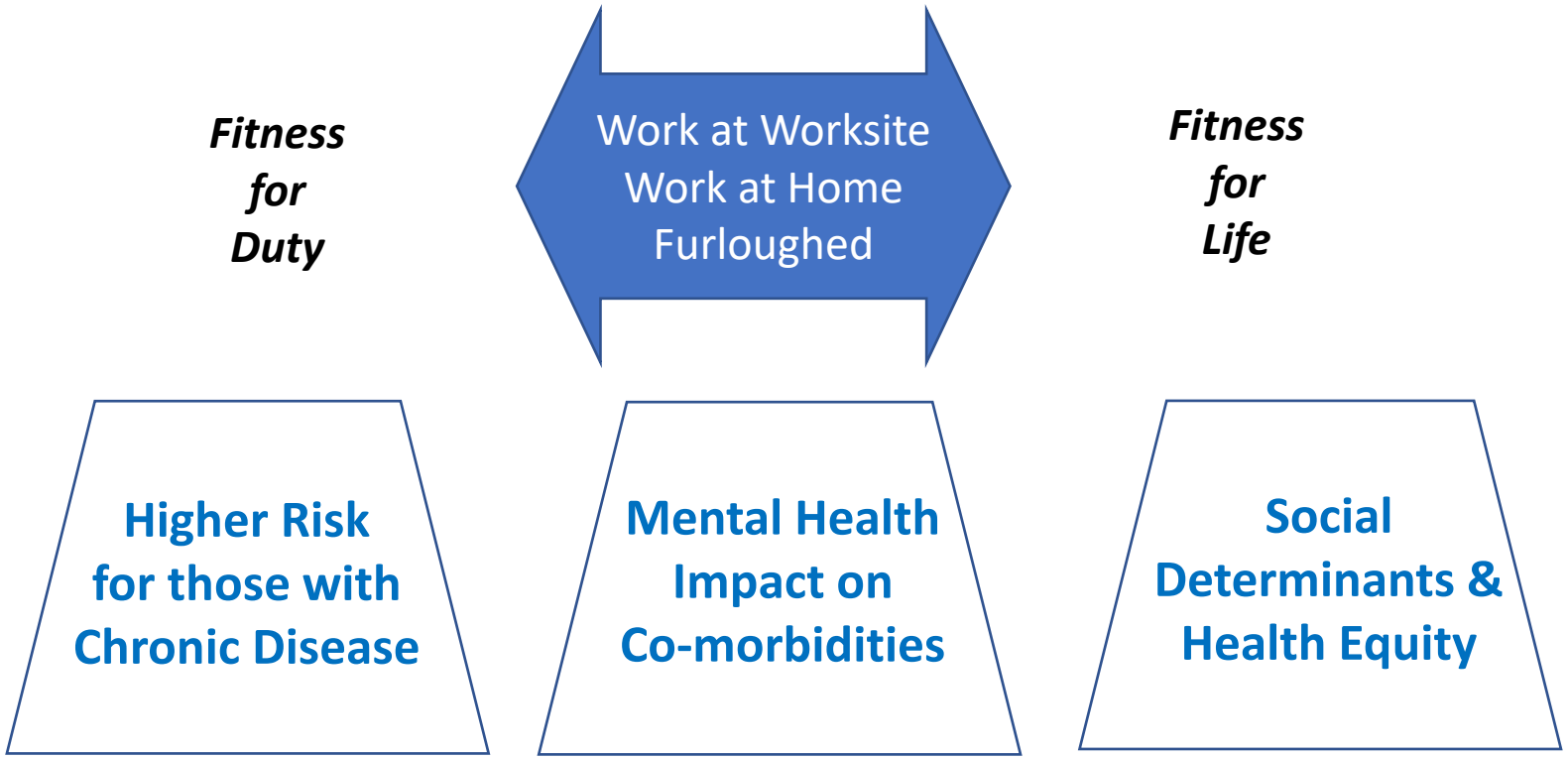
The Covid-19 Era – Accentuating Forces related to Population Health

First Wave
Covid-19

Second Wave
Mental Health

Third Wave
Total Person Health



Covid-19 Era Impact on Risk Factors?

- Addiction
- Diet
- Cardio Fitness
- Ergonomics
- Obesity
- Sleep
- Stress
- Other

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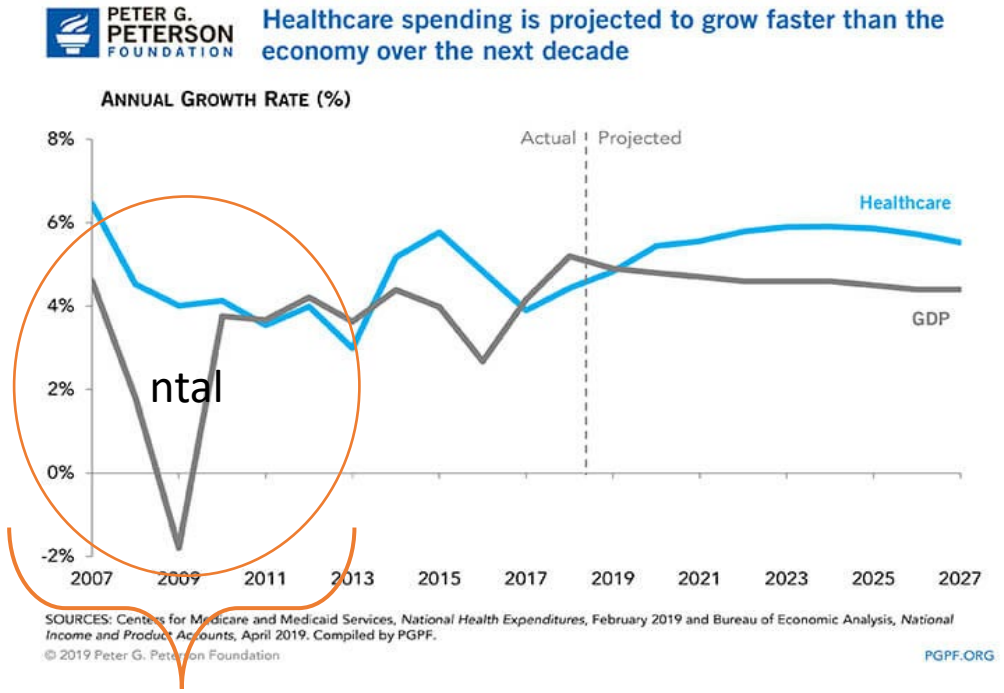
Is Healthcare Delivery in for a “Covid-19 Correction”?

Healthcare has been “recession-proof” for the past 40 years



“The Great Recession”

Impact of Covid-19 to date

- Elective Surgery – Down
- Primary Care Visits - Down
- Specialty Care Visits – Down
- Onsite Clinics – Temporary Closures
- Medications – Up, Down, ?
- Virtual Visits – Up, Up, Up
- Mental Health – Continuing to rise

National Alliance of Healthcare Purchaser Coalitions
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Panelist Discussion

Moderator

Mike Thompson
President & CEO
National Alliance

- Jenny Goins
  Comissioner, Department of Insurance, KY Personnel Cabinet
- DeAnna Hall, RN
  Manager Corporate Health & Wellness, LG&E, KY Utilities
- Mike Lorch
  Regional Vice President, Anthem Blue Cross & Blue Shield of Kentucky
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COVID-19 – KEHP's Response

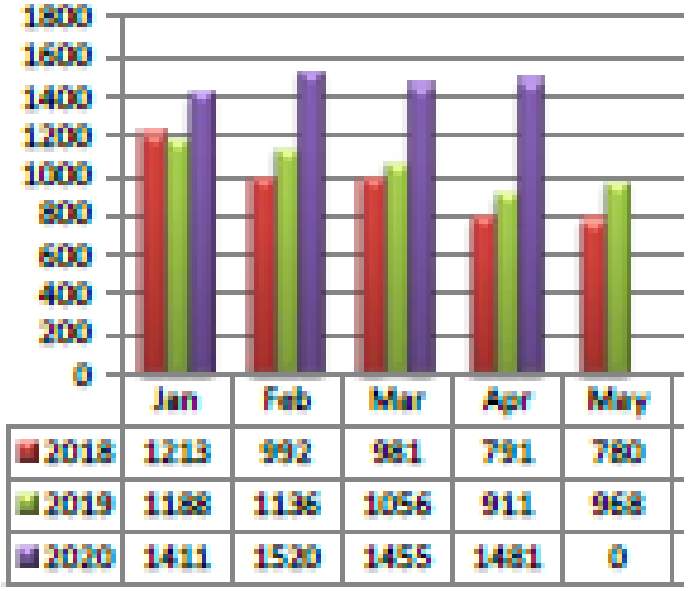
- No member cost share
  - Inpatient & outpatient services January 1 – December 31
  - Screening and testing
  - Telehealth services expanded by 100% coverage for medical and behavioral health through LiveHealth Online
  - Automatic refill approvals on maintenance medications
  - Extension of pharmacy prior authorizations for 90 days
- FSA and HRA
  - Runout extended
  - Adopted new IRS rules

COVID-19 – KEHP's Concerns

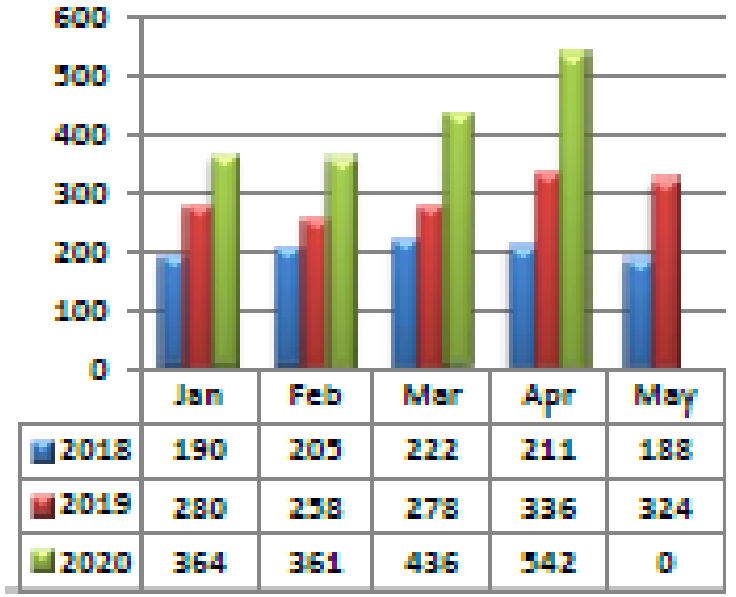
- Costs – watching closely and hopefully offset by delayed elective procedures
- Impact of COVID-19 on sickest population
  - Diabetes, heart disease, high blood pressure a large component of KEHP spend
- Lower utilization of preventive services

COVID-19 – KEHP's Telehealth Preparedness

- Free coverage of LiveHealth Online
  - Medical since 2016; behavioral health 2017



	Jan	Feb	Mar	Apr	May
2018	1213	992	981	791	780
2019	1188	1136	1056	911	968
2020	1411	1520	1455	1481	0



	Jan	Feb	Mar	Apr	May
2018	190	205	222	211	188
2019	280	258	278	336	324
2020	364	361	436	542	0

HEALTHCARE IN THE COVID-19 ERA

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COVID-19 Testing: Moving from the Wild, Wild West to Evidence-Driven Approaches

Ruth Carrico, PhD, DNP, APRN, FSHEA, CIC

Professor, Division of Infectious Diseases | University of Louisville
Editor-in-Chief | Journal of Refugee and Global Health

COVID-19 Testing: Moving From the Wild Wild West to Evidence-Based Approaches

Ruth Carrico PhD DNP APRN CIC FSHEA FNAP
Professor
Division of Infectious Diseases
University of Louisville School of Medicine

Objectives

- Review the current testing landscape involving healthcare
- Explore development of a testing strategy that can be individualized

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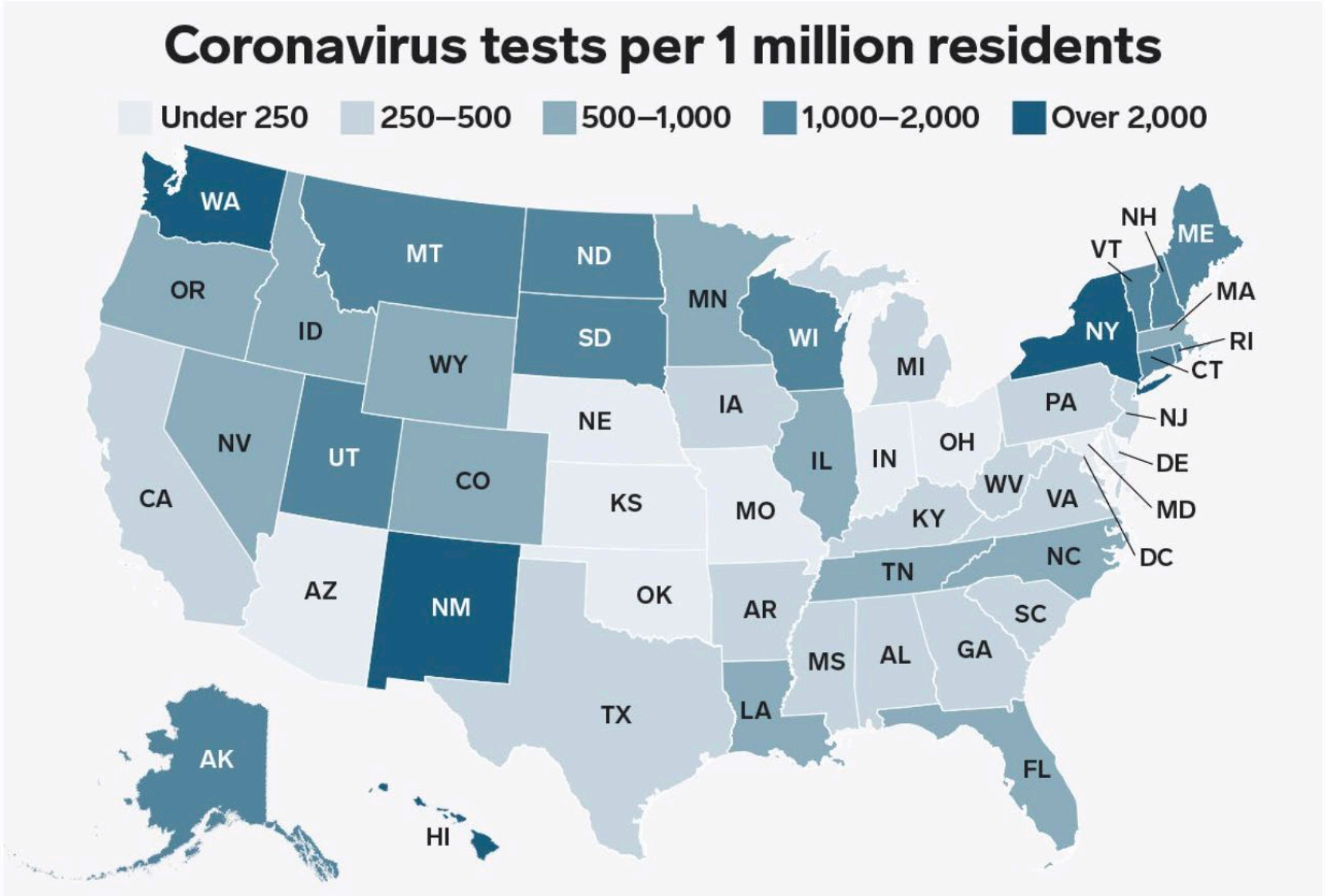
"THAT'S ODD: MY FACEBOOK FRIENDS WHO WERE CONSTITUTIONAL SCHOLARS JUST A MONTH AGO ARE NOW INFECTIOUS DISEASE EXPERTS..."

Coronavirus tests per 1 million residents



TOTAL TESTS REPORTED	POSITIVE TESTS REPORTED	% OF POSITIVE TESTS
15,183,888	1,858,968	12%

COVID-19 Testing Approaches: Testing for Presence of the Virus

- Testing to identify presence of the virus
  - Nasopharyngeal swab is the gold standard
  - Performance of testing in a CLIA-certified laboratory is the gold standard
  - All other approaches will likely provide results that are below this standard
  - Therefore, if you are testing for diagnosis then gold standard should be the goal
- Technique is essential
  - Right type of swab
  - Right transport media
  - Right placement of swab
  - Right transport conditions

COVID-19 Testing Approaches: Testing for Immunity to the Virus

- Testing to identify presence of antibodies
  - Fingerstick point of care test
    - Rapid test
    - Plethora of tests with many yielding inconsistent and inaccurate results
    - Recently, 20 tests removed from the FDA approval list due to false positive result rates
  - Phlebotomy
    - More blood volume and opportunity to concentrate existing antibodies
    - Better opportunity for accurate results, but many unanswered questions

Testing for Immunity

- Testing done via blood draw enables concentration of antibodies and may provide a more valid test to determine presence of antibodies
- But, the questions still remain:
    - Are those antibodies specific to SARS-CoV-2
    - Are those antibodies protective
    - Are there enough protective antibodies to prevent disease
    - If there are enough protective antibodies to prevent disease, how long do they last
- Work continues on those test to improve identification of specific types of protective antibodies and see how they last, including whether or not the individual gets infected again

Testing for Immunity

- Typically, during an infection antibodies are produced.
- Some immunoglobulins indicate current infection (IgM)
- Some immunoglobulins indicate prior infection (IgG)
- Some infections result in antibodies that provide long lasting immunity (e.g., rubeola)
- Some infections result in antibodies that do not provide any protection (e.g., HIV)
- Some viruses change frequently so prior antibodies may be ineffective (e.g., influenza)

Should I Encourage Mass Testing?

- NP swab gives you results that represent a single point in time (assuming test done correctly and analysis performed in competent laboratory)
- For asymptomatic personnel, testing not recommended unless individual is part of a high risk group (e.g., healthcare worker, long term care resident)
- We currently lack sufficient capacity for broad community testing. Therefore, unnecessary testing negative impacts those who need to be tested
- If there are special circumstances, local or state public health can assist

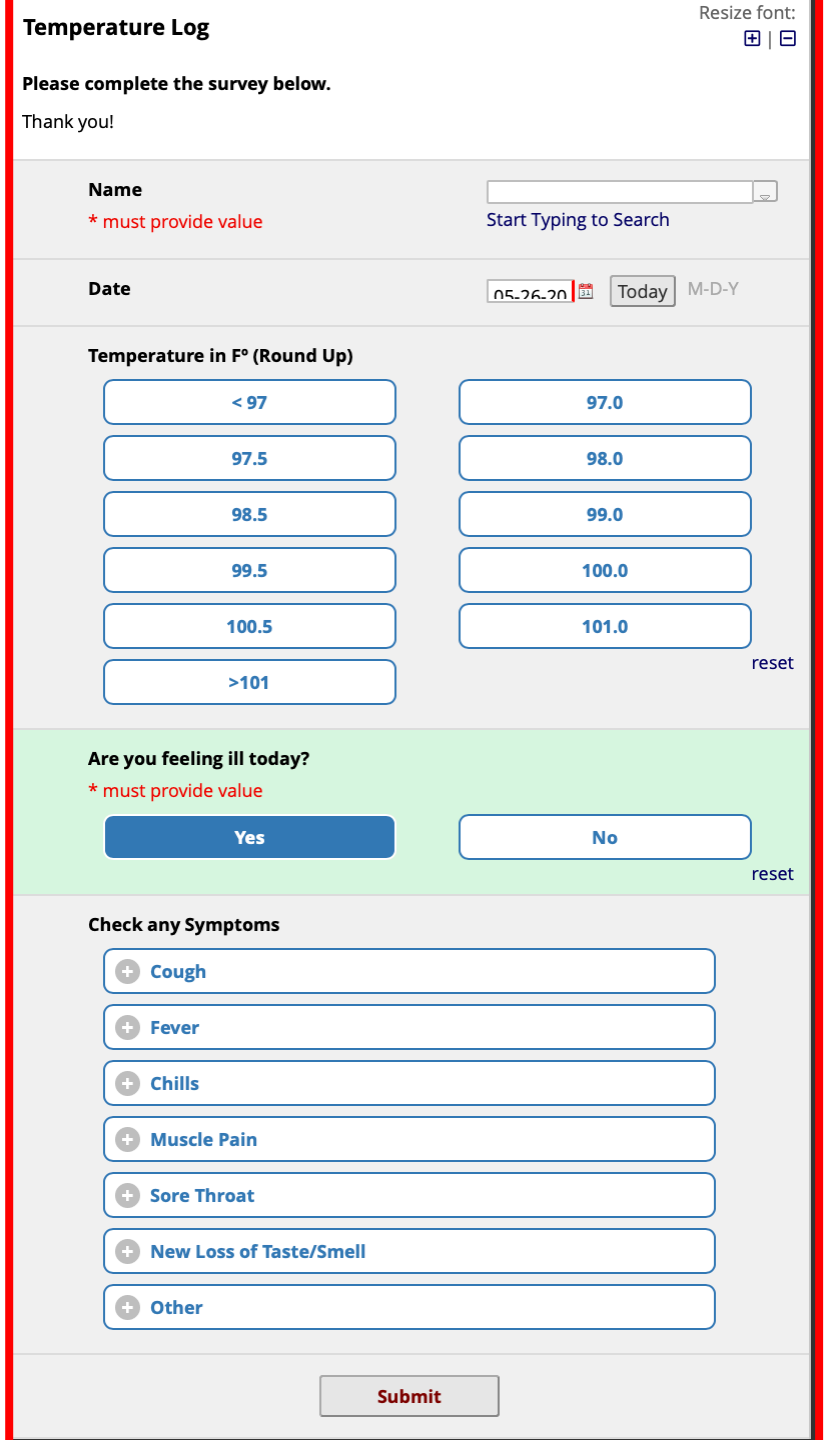
I Am Seeking Help With Testing. What Do I Look For in a Test and a Laboratory?

- If testing for presence of the virus (you are concerned about illness or asymptomatic carriers), the NP swab is the gold standard.
- If you are testing for presence of immunity, please reconsider. Current testing technology using fingerstick testing methods is of limited reliability. CDC, WHO, IDSA encourage use of immunity testing ONLY as a means to determine possible level of prior infection in a community. All discourage use of immunity testing to give individual results without benefit of an expert clinician who can provide context for the results. Larger volumes of blood (e.g., via phlebotomy) have greater likelihood of truer results.

I Am Trying to Develop a Strategy for Testing. What Can I Use as a Roadmap for Success?

- First consider the purpose of testing. Then, what will you do with the results?

- One approach is to start with the workforce. Engage them in early recognition of illness and empower them to stay home when ill.
- Provide mechanism for personnel to access healthcare provider who can assess them signs and symptoms (e.g., Telehealth)
- If provider feels testing is indicated, where do they go for testing?
- Work-related versus life-related exposure/transmission
- Who helps provide context for results, especially if positive, to manage the impact on your facility?



- All personnel provided a digital thermometer and demonstration for use
- Email link automatically sent each morning to all personnel
- Responses can be entered via cellphone or computer
- Request to capture health information relevant for COVID-19
- Responses indicating symptoms of concern will be followed by dialogue box that opens providing instructions (e.g., call designated provider before coming to work)
- Response submitted by into REDCap database
- HIPAA compliant and secure

Testing Information

Ruth Carrico PhD DNP APRN

Infectious Diseases CLIA-Certified Reference Laboratory

Ruth.Carrico@Louisville.edu

PCR testing and clinical relevance

Results portal

Results generally available within 24 hours of specimen receipt in laboratory

Breakthrough Treatment for Coronavirus: Where are We?

Paula Bates, PhD

Professor of Medicine | University of Louisville
Co-Director | KYNETIC
Fellow | National Academy of Inventors

How a Cancer Researcher Became a Coronavirus Researcher …

Paula J. Bates, Ph.D.

Professor, Departments of Medicine and Biochemistry

Brown Cancer Center & University of Louisville

Co-Director, KYNETIC Hub (an NIH REACH site)

About Me …

Researcher
- cancer biology & drug discovery
- translational research focus
- “bench-to-bedside” cancer drug

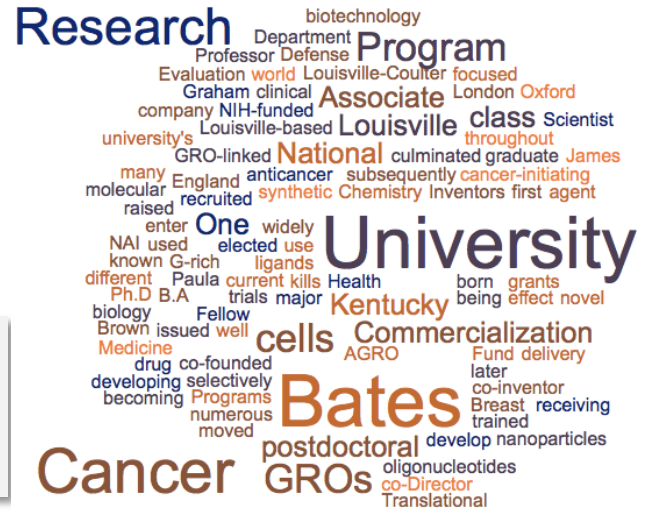
Mentor
- students, trainees
- faculty, entrepreneurs

Inventor
- 14 issued US patents (cancer-focused)
- Fellow, National Academy of Inventors

Entrepreneur
- co-founder, Aptamera
- co-founder, Kynetic Pharma

Industry Collaborator
- Antisoma, Transmed, Qualigen

Program Co-Director
- UofL-ExCITE, an NIH REACH Hub
- KYNETIC, an NIH REACH Hub



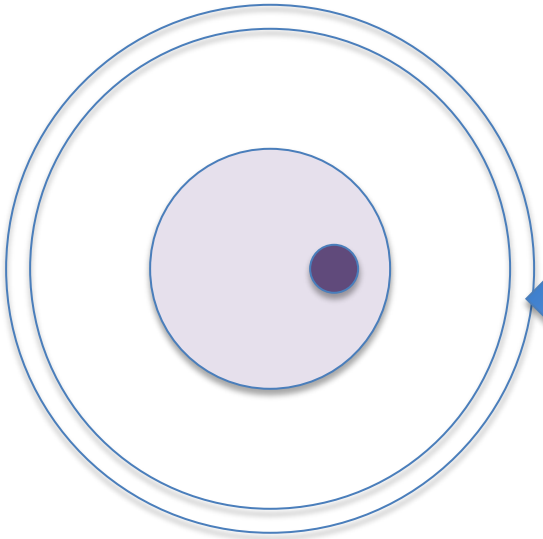
Why is a Cancer Researcher Talking About COVID-19?

January 2020: Start to worry about “the new coronavirus” …

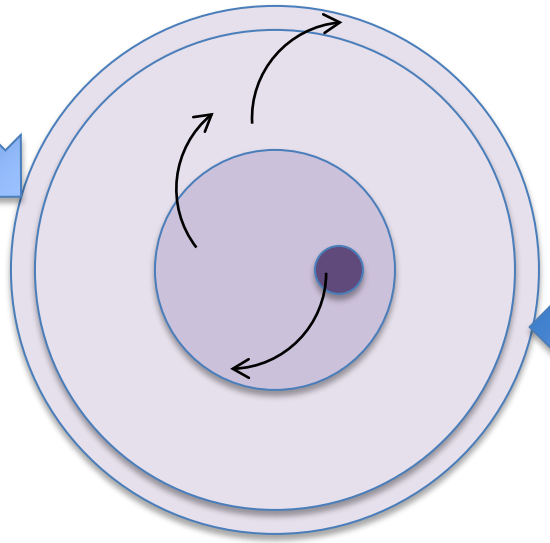
February 2020: Hatch an **idea** to inhibit SARS-CoV-2 based on previous research related to **nucleolin**

Nucleolin and Cancer

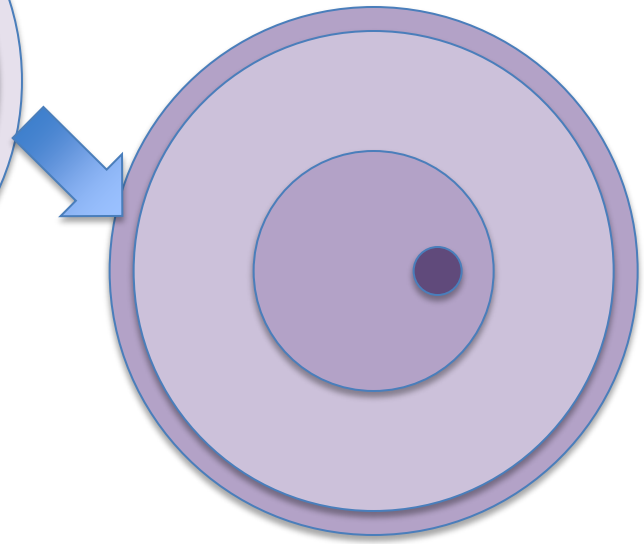
Normal Cell: **Nucleolin**
found inside the cell



Response to stress or some signals:
Nucleolin also found on the cell surface

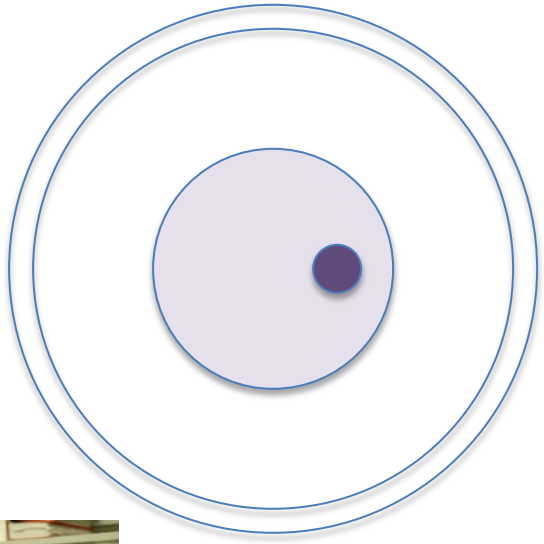


Cancer Cell: **Nucleolin**
present at high levels throughout the cell.

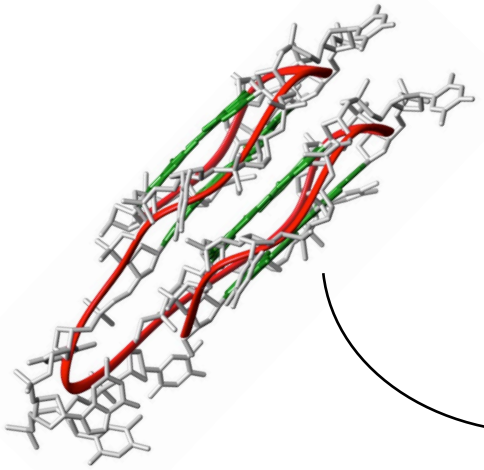


A Nucleolin Aptamer

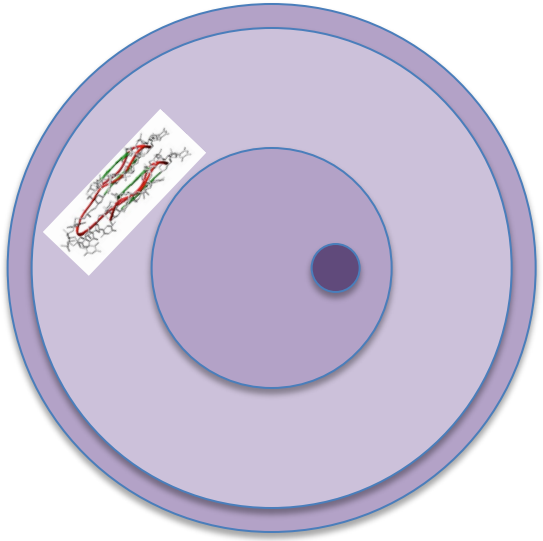
Normal Cell: **Nucleolin** inside the cell (invisible to aptamer)

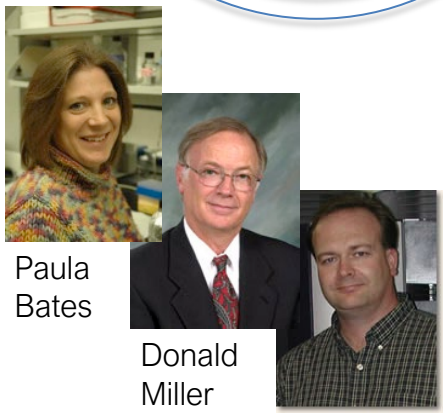


- A short strand of synthetic DNA
- Forms an unusual structure (G-quadruplex)
- Binds to and inhibits nucleolin protein
- Selectively targets & kills cancer cells



Cancer Cell: **Nucleolin** present at high levels, including on the cell surface





Paula Bates

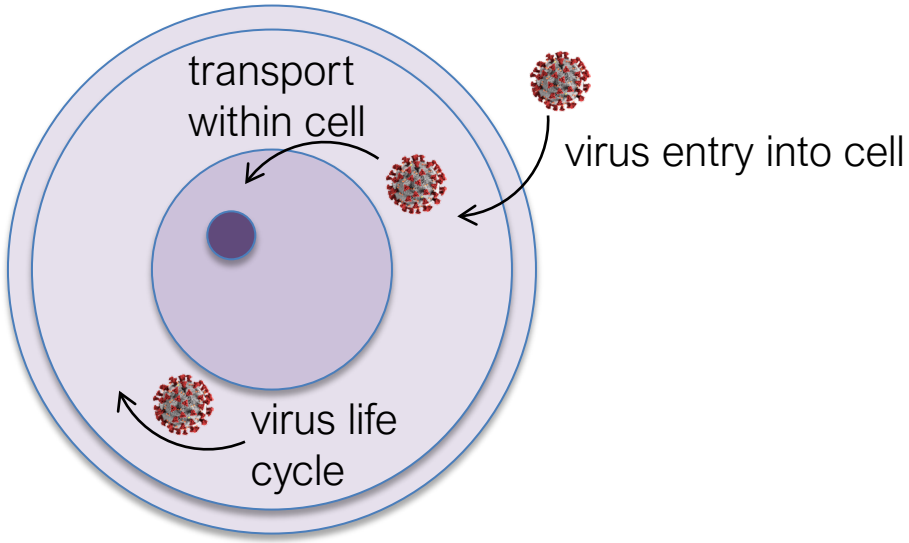
Donald Miller

John Trent

- Phase 1 and 2 clinical trials
- > 100 cancer patients treated
- **No serious side effects** due to drug
- Some evidence of clinical activity

Nucleolin and Viruses

Response to stress or some signals:
Nucleolin also moves to the cell surface when cells are infected by some **viruses** and has been shown to play important roles in virus infectivity:



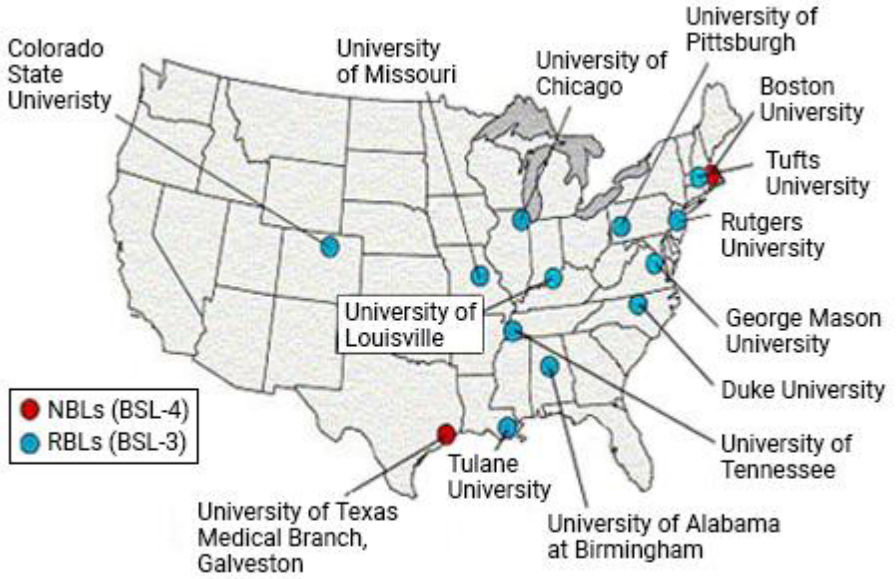
Nucleolin implicated in the biology of …

- HIV-1
- influenza A
- hepatitis C virus
- respiratory syncytial virus (RSV)
- herpes simplex virus 1 (HSV-1)
- human cytomegalovirus (CMV)
- dengue virus
- Epstein-Barr virus (EBV)
- human papilloma viruses (HPV)
- rabies virus
- coxsackie B virus
- enterovirus 71 (EV71)
- parainfluenza virus
- Crimean-Congo hemorrhagic fever virus
- avian IBV coronavirus
- SARS coronavirus (predicted)

Can the nucleolin aptamer block SARS-CoV-2?

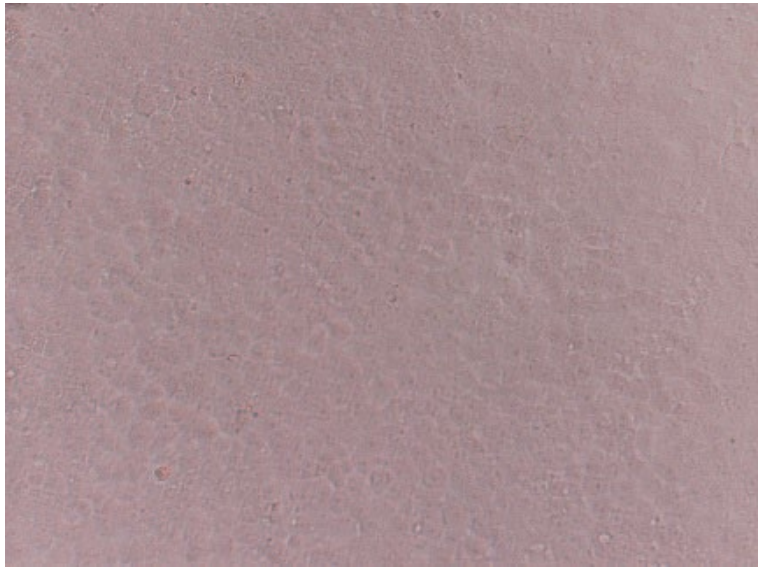
Luckily, I'm in Louisville

February 2020: Discuss idea with Kenneth Palmer, head of UofL's Center for Predictive Medicine and Regional Biocontainment Lab (RBL)

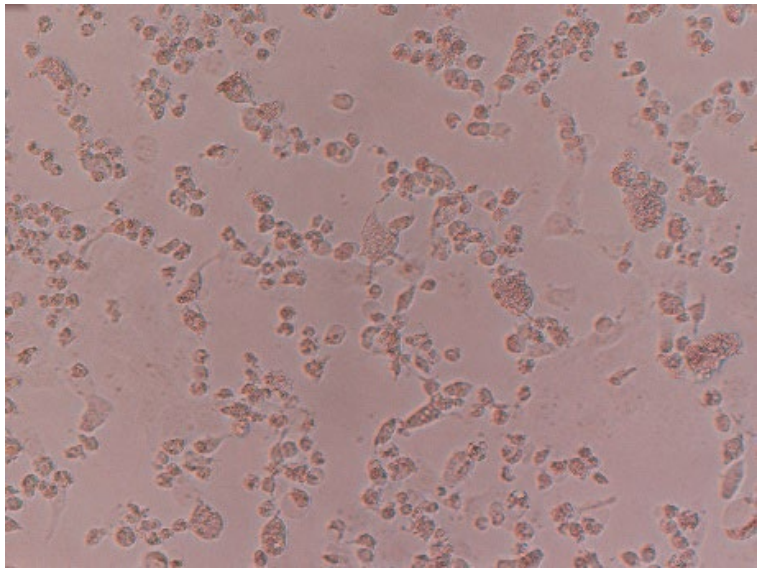


Cytopathic Effect Assay

March 2020: Test in cells infected with SARS-CoV-2



Without SARS-CoV-2:
Cells look healthy, grow to confluence

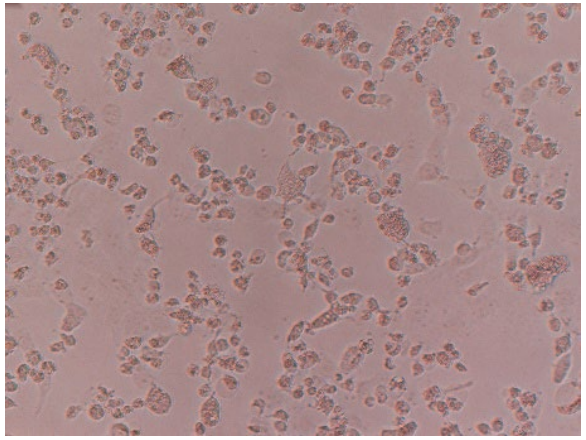


Infected with SARS-CoV-2:
Cell fusion (syncytia) and cell death

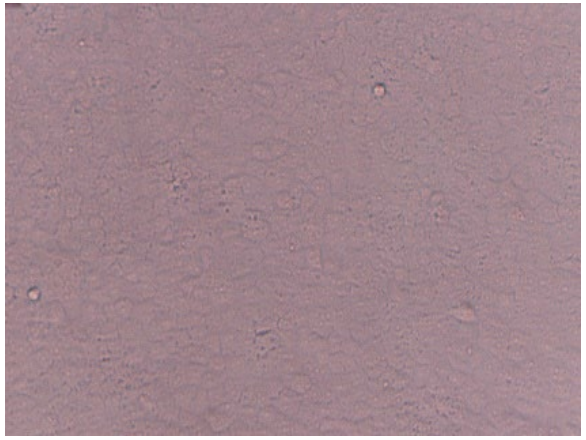
Cytopathic Effect Assay

March 2020: Evidence that nucleolin aptamer inhibits SARS-CoV-2 infection*

Without SARS-CoV-2



Infected with SARS-CoV-2



Treated with aptamer;
infected with SARS-CoV-2

* Thanks to Kenneth Palmer and the faculty and staff at the CPM

What's Next?

- ✓ Experimental drug, known to be safe in cancer clinical trials
- ✓ Proof-of-concept activity against SARS-CoV-2

- Additional cell/tissue studies, including mechanism (UPS gift)
- Additional studies in animal models?
- Seek FDA authorization for human studies
- Human clinical trials in COVID-19 patients

- (Unrelated to aptamer, **pending**) KYNETIC COVID-19 pipeline?

CLOSING

Stephanie Clouser, MSA

Data Scientist | KHC

UPCOMING KHC MEMBER EVENT

KHC Members: For meeting notice and details, email Stephanie at sclouser@khcollaborative.org or visit the KHC member portal at www.KHCollaborative.org/members.

POST-EVENT SURVEY

Provide your feedback

www.KHCollaborative.org/juneforumfeedback

REMINDER

Access event materials

KHCollaborative.org/initiatives/covid19

Thank you for attending!

THE IMPACT OF COVID-19 ON OUR HEALTHCARE SYSTEM AND COMMUNITY

A Community Health Forum