



# COVID-19 and Sepsis

## Presenters:

Karin Molander, MD, FACEP

Emergency Medicine Physician

Mills Peninsula Emergency Medicine Associates

Cindy Hou, DO, MA, MBA, FACOI, FACP, FIDSA

Infection Control Officer

Jefferson Health New Jersey

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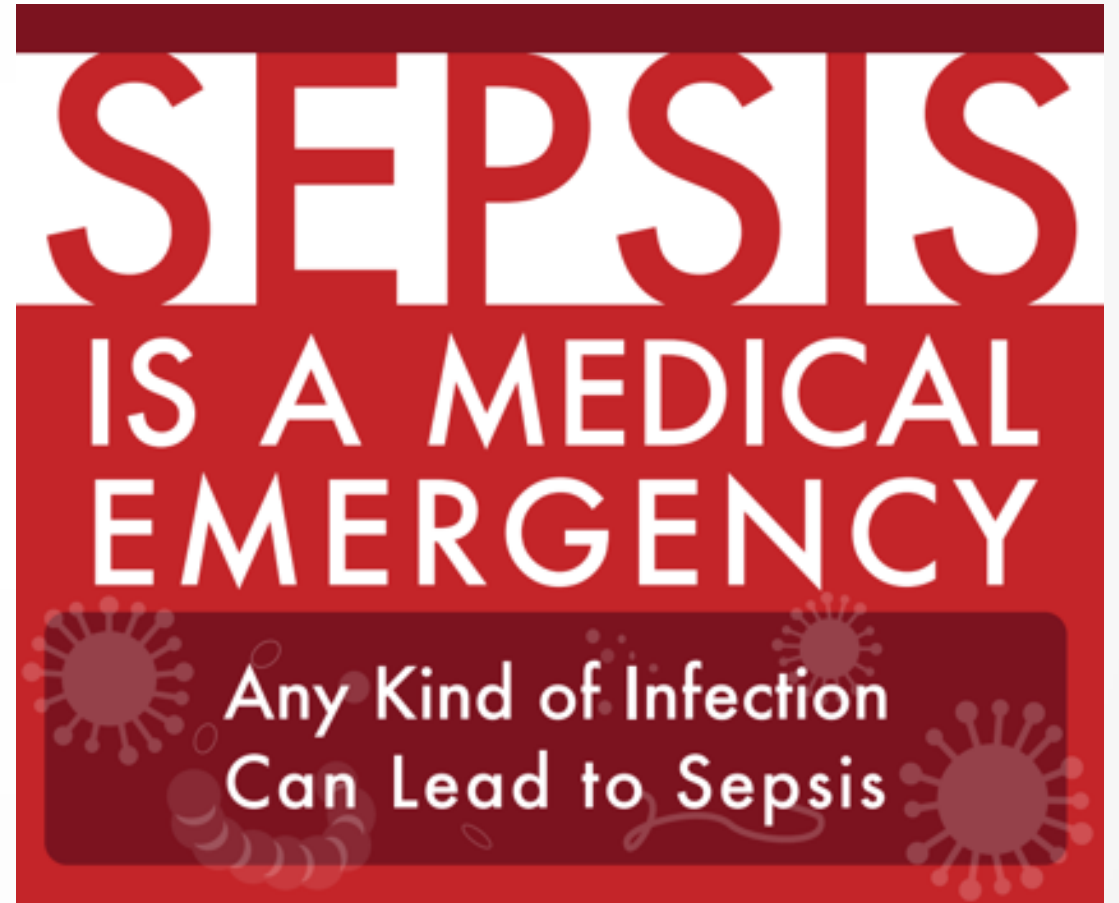
The Sepsis Institute

# Sepsis Alliance Mission



To save lives and reduce suffering by improving sepsis awareness and care.

<https://www.sepsis.org>



# Disclaimer

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The information in this webinar is only intended for educational purposes on COVID-19 and sepsis related matters. The presentations and content are the opinions, experiences, views of the specific authors/presenters and are not statements of advice or opinion of Sepsis Alliance. The presentation has not been prepared, screened, approved, or endorsed by Sepsis Alliance.

# Presenter Biographies



**Karin Molander, MD,  
FACEP**

Emergency Medicine  
Physician

Mills Peninsula Emergency  
Medicine Associates

- Emergency medicine physician who provides emergency care to patients in the community setting and analyzes quality of care
- Former chair of MPMC Sepsis Committee
- Participated in LEAN process to develop sepsis initiative for Sutter Area Hospitals as part of collaborative, which developed electronic health record (EPIC) order sets, screening tools, standard work for management of the septic shock and the severe sepsis patient
- On Sepsis Alliance's Board of Directors



**Cindy Hou, DO, MA, MBA,  
FACOI, FACP, FIDSA**

Infection Control Officer

Jefferson Health New Jersey

- Infection Control Officer at Jefferson Health New Jersey, a hospital system that was nationally recognized by Sepsis Alliance as a Sepsis Hero in 2016
- Physician lead for the hospital's Antimicrobial Stewardship Committee, Sepsis on the Floors Task Force, and more
- Helped to champion development of nurse-initiated policies, old school education, and the impact of multi-disciplinary teams on survival of patients with sepsis
- On Sepsis Alliance's Advisory Board of Directors

# SARS-CoV-2

- **Why is this virus different?**

- Novel- “New” SARS-CoV-2= virus, COVID-19 = infection
- No immunity
- No vaccination
- No SARS-CoV-2 directed treatments

- **Why is it challenging to stop the spread?**

- Incubation time 2-14 days (average 4.5 days)
- Viral shedding from day 0-21.
- 18% asymptomatic, only 44% w/ fever at admission, 89% later.
- Can mimic other illnesses, 10% diarrhea PRIOR to fever/cough
- Lack of testing available and delayed results
- 1/3 false negative PCR test

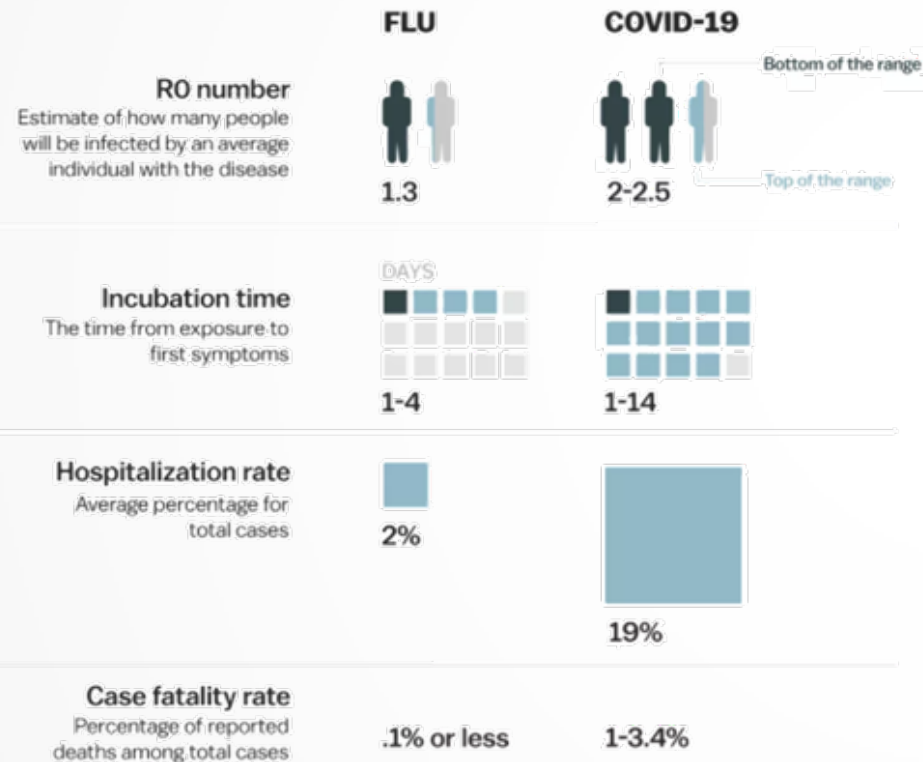
# SARS-CoV-2

## • Challenges of COVID-19

- 18% Asymptomatic (more likely, pre-symptomatic)
- Rapid decompensation (PPE bag with Code Blue box)
- May develop secondary bacterial infection
- Public doesn't grasp the consequences when patient needs exceed available hospital capacity

# COVID-19 estimated spread in US

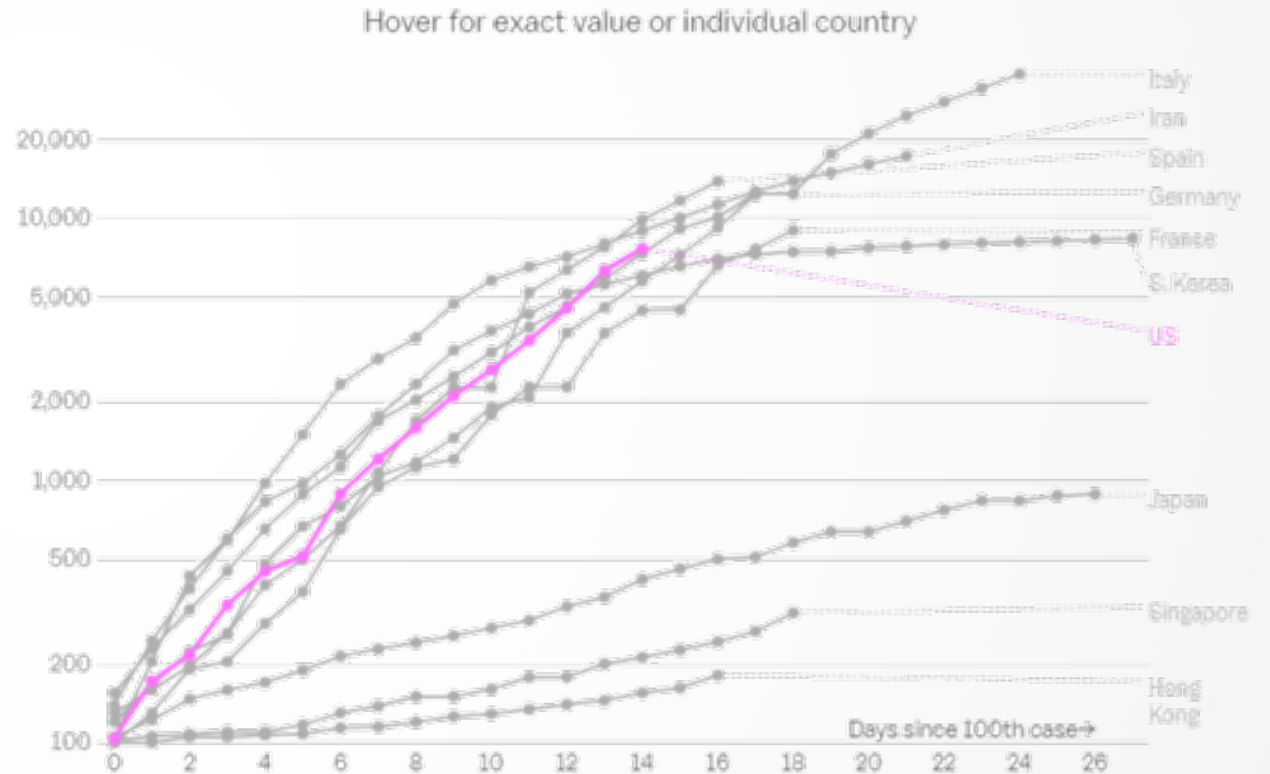
## How seasonal flu and Covid-19 compare



Sources: CDC, WHO, NCBI

Vox

## Number of confirmed coronavirus cases, by days since 100th case



Note: Chart is in log scale to mimic the exponential rate at which the virus spreads

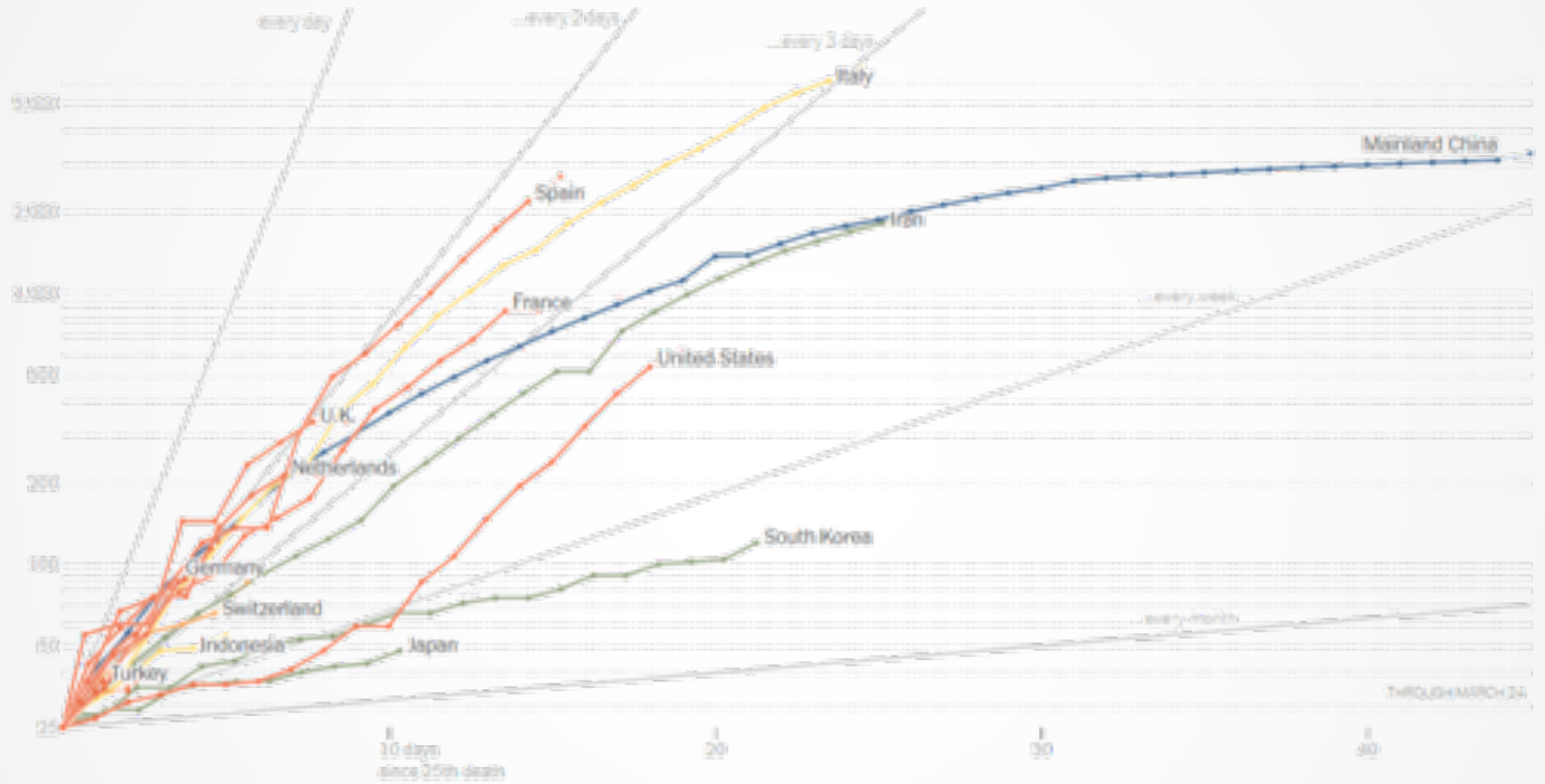
# Virus Typical Clinical Course

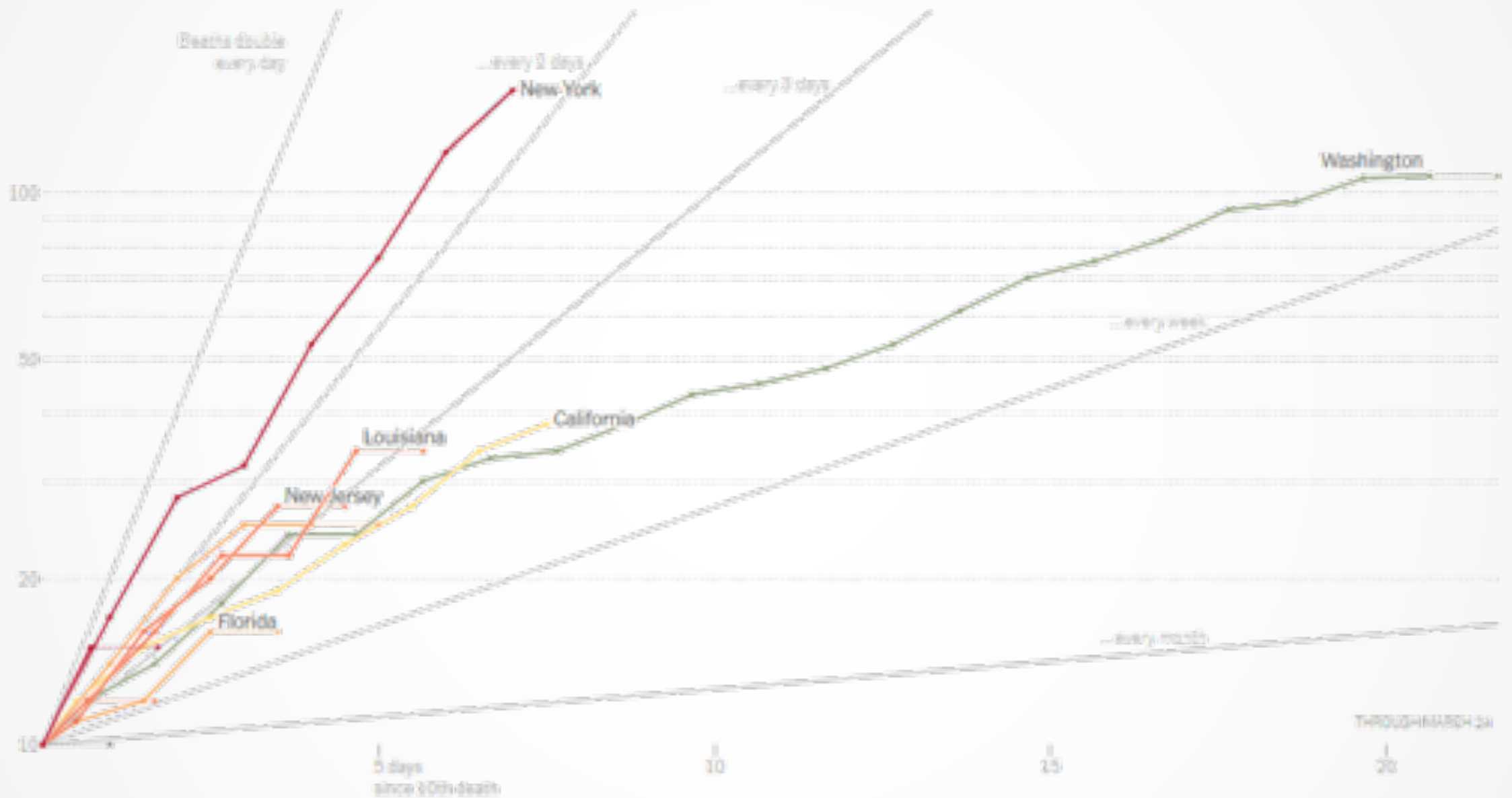
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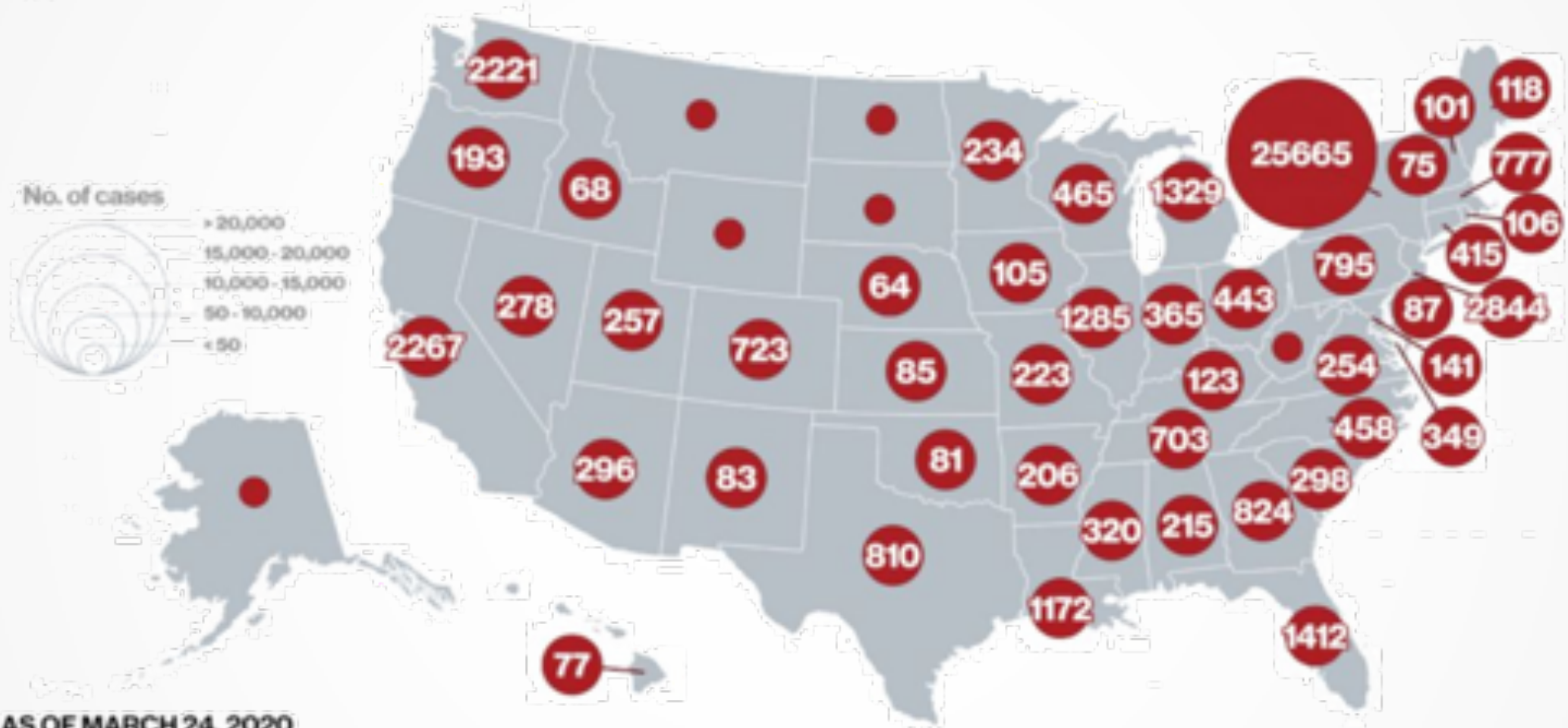




Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	Active Cases	Serious, Critical	Tot Cases/ 1M pop	Tot Deaths/ 1M pop
<a href="#">China</a>	81,171	+78	3,277	+7	73,159	4,735	1,573	56	2
<a href="#">Italy</a>	69,176	+5,249	6,820	+743	8,326	54,030	3,393	1,144	113
<a href="#">USA</a>	52,983	+9,249	685	+132	370	51,928	1,175	160	2
<a href="#">Spain</a>	39,885	+4,749	2,808	+497	3,794	33,283	2,355	853	60
<a href="#">Germany</a>	32,986	+3,930	157	+34	3,243	29,586	23	394	2
<a href="#">Iran</a>	24,811	+1,762	1,934	+122	8,913	13,964		295	23
<a href="#">France</a>	22,304	+2,448	1,100	+240	3,281	17,923	2,516	342	17
<a href="#">Switzerland</a>	9,877	+1,082	122	+2	131	9,624	141	1,141	14
<a href="#">S. Korea</a>	9,037	+76	120	+9	3,507	5,410	59	176	2
<a href="#">UK</a>	8,077	+1,427	422	+87	135	7,520	20	119	6
<a href="#">Netherlands</a>	5,560	+811	276	+63	2	5,282	435	324	16
<a href="#">Austria</a>	5,283	+809	28	+7	9	5,246	22	587	3
<a href="#">Belgium</a>	4,269	+526	122	+34	461	3,686	381	368	11
<a href="#">Norway</a>	2,779	+154	12	+2	6	2,761	44	513	2
<a href="#">Canada</a>	2,590	+499	25	+1	112	2,453	1	69	0.7







AS OF MARCH 24, 2020

SOURCE: JOHNS HOPKINS CSSE

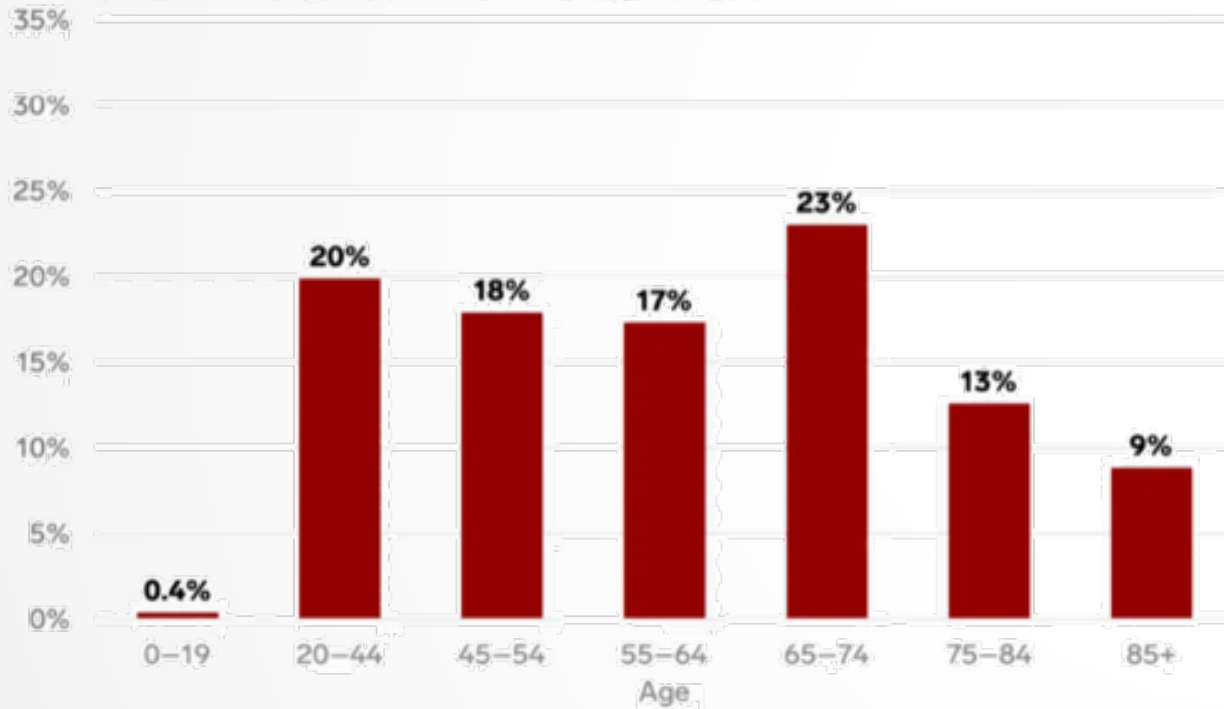
\*Does not include individuals repatriated to the US from Wuhan, China, and from the Diamond Princess cruise ship.





## Age distribution of US COVID-19 hospitalizations

Percent share of hospitalizations in each age bracket

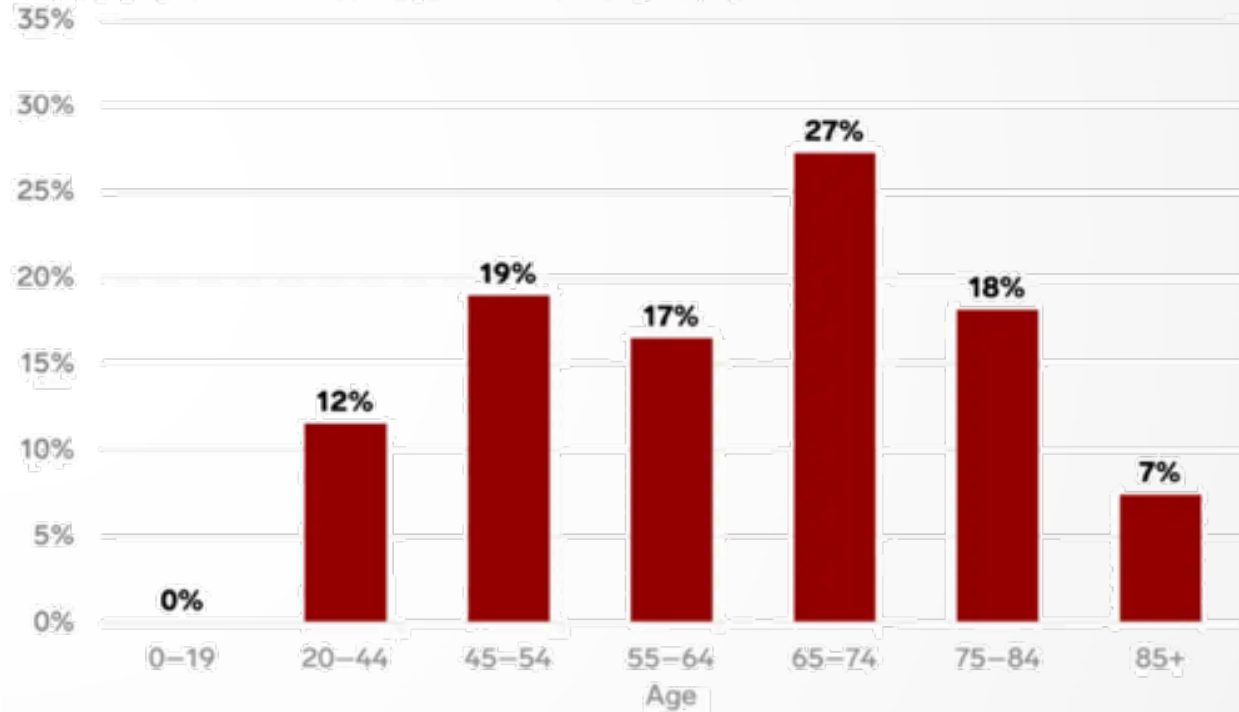


Source: Centers for Disease Control and Prevention, COVID-19 Response Team

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## Age distribution of US COVID-19 ICU admissions

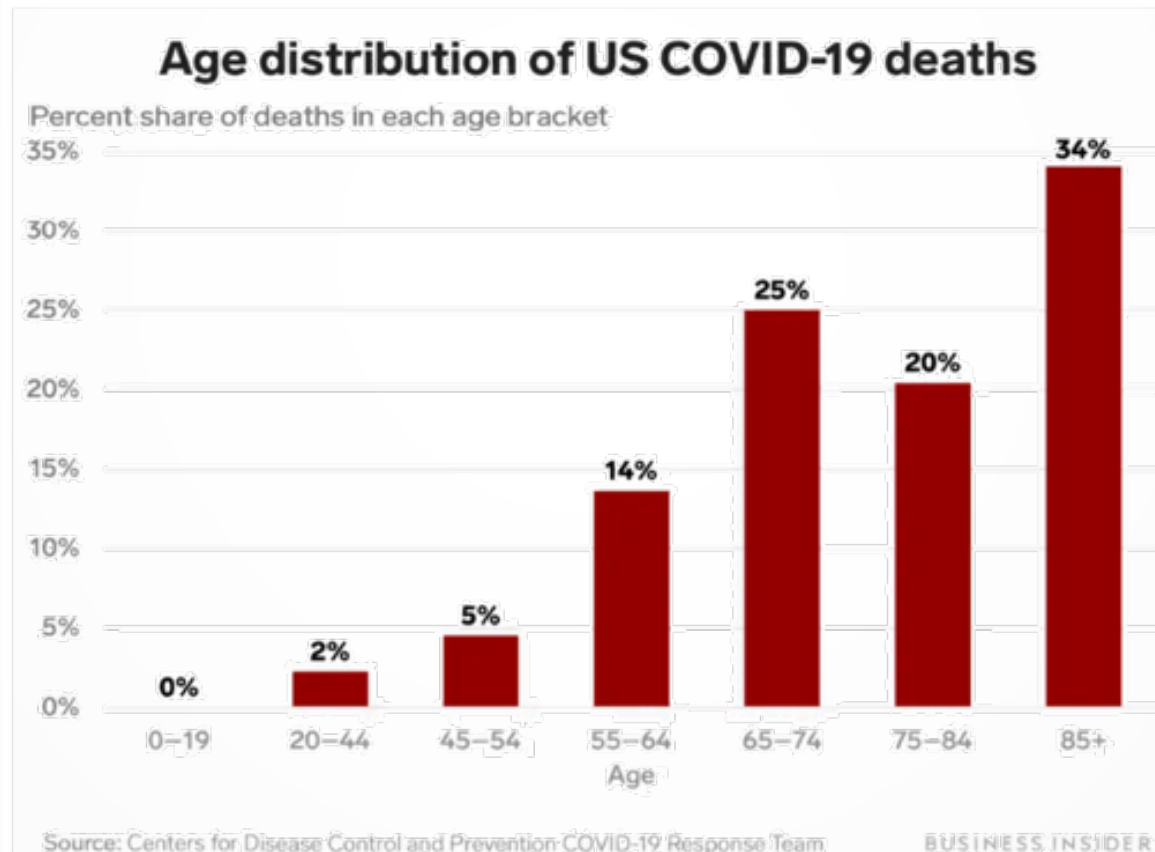
Percent share of ICU admittances in each age bracket



Source: Centers for Disease Control and Prevention, COVID-19 Response Team

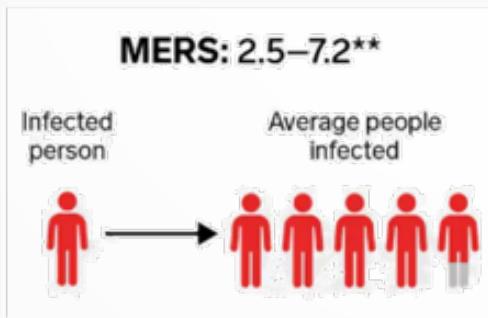
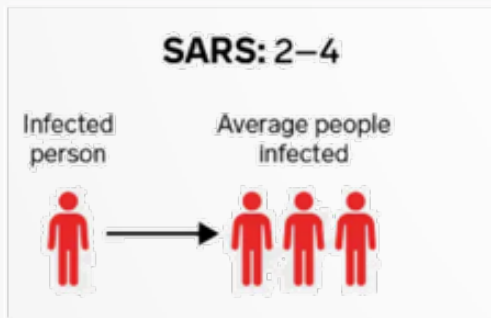
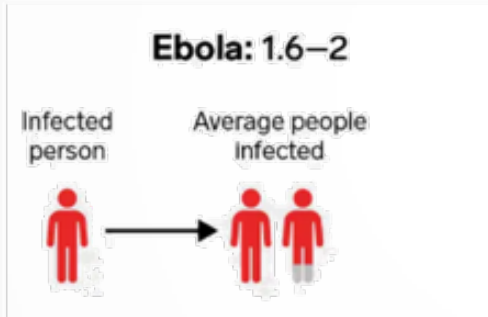
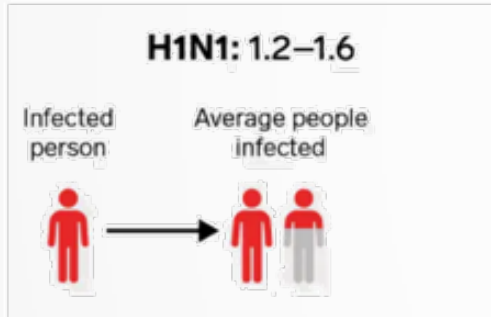
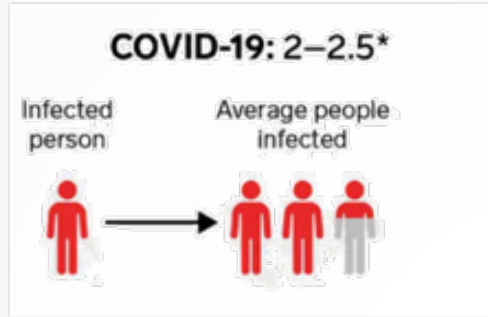
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**US coronavirus death rates, however, are still far lower for younger Americans than among older age groups.**



An average coronavirus patient infects 2 to 2.5 others.

**The average number of people that one person with a virus infects, based on the R0 scale**



The coronavirus typically spreads via airborne droplets from an infected person's coughs or sneezes. Live coronavirus particles can survive for a time on surfaces.

**How long COVID-19 can live on common surfaces\***

SURFACE	LIFESPAN OF COVID-19
Air	3 hours
Copper	4 hours
Cardboard	24 hours
Stainless Steel	2–3 days
Polypropylene plastic	3 days

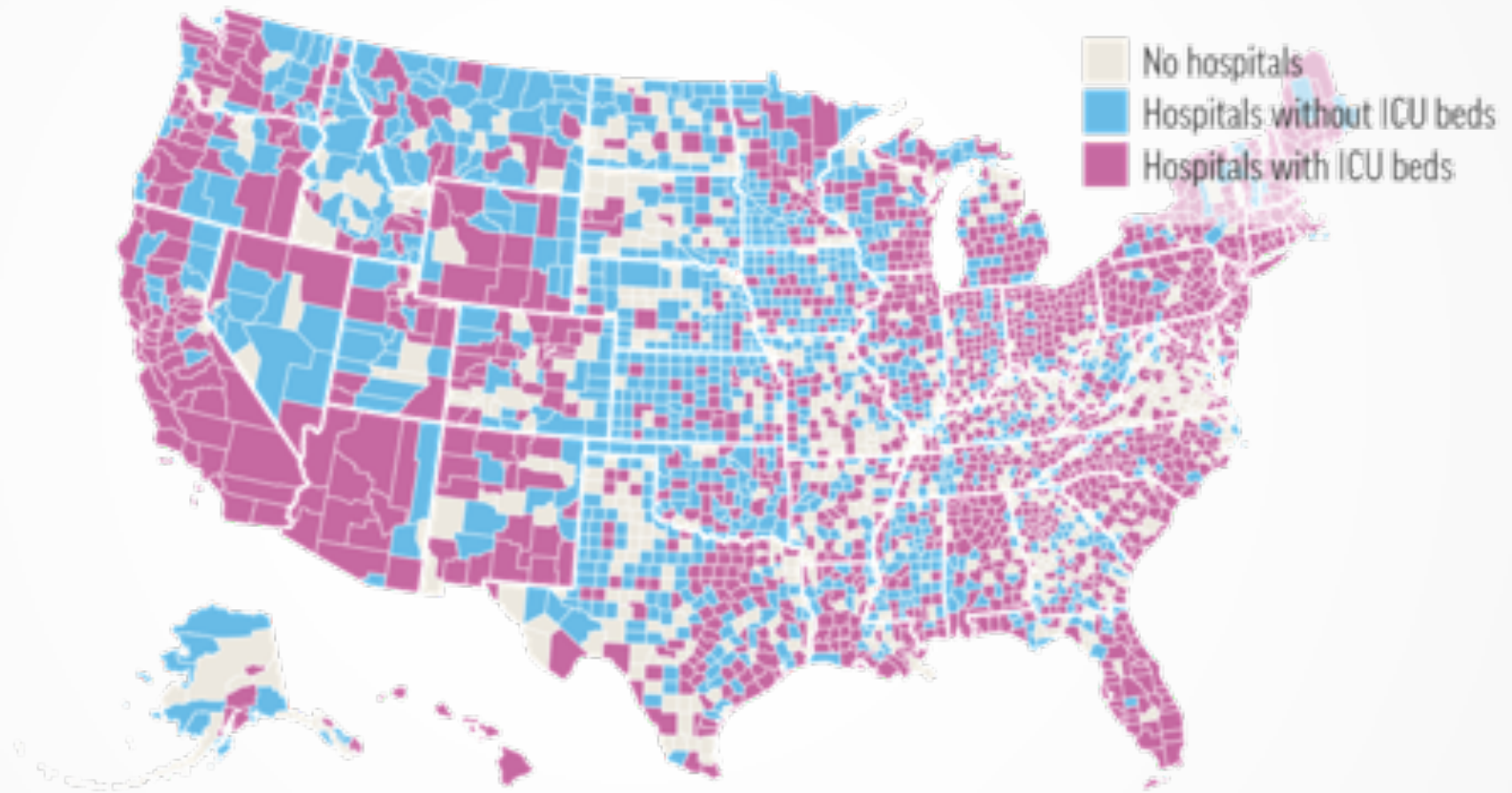
\*At 69.8 to 73.4°F (21 to 23 °C) and 40% relative humidity

Source: New England Journal of Medicine

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Shyanne Gal/Business Insider

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Source: Kaiser Health News analysis of hospital cost reports filed to the Centers for Medicare & Medicaid Services.



# Emergency Department

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- **Current experience**
- **Lessons learned**
- **Preparation for hospital and staff**

# Hospital View Infectious Disease Perspective

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- **Current experience**
- **Lessons learned**
- **Preparation for hospital and staff**

# Sepsis: It's About T.I.M.E.™

- Application to progression of virus like COVID-19

When it comes to sepsis, remember **IT'S ABOUT TIME™**. Watch for:

**T** — **TEMPERATURE**  
higher or lower than normal

**I** — **INFECTION**  
may have signs and symptoms of an infection

**M** — **MENTAL DECLINE**  
confused, sleepy, difficult to rouse

**E** — **EXTREMELY ILL**  
"I feel like I might die," severe pain or discomfort

Watch for a combination of these symptoms. If you suspect sepsis, see a doctor urgently. CALL 911 or go to a hospital and say, "I AM CONCERNED ABOUT SEPSIS."

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# Submitted Questions

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*[SepsisInstitute.org](https://SepsisInstitute.org)*

# Questions

## Patient Presentation/Diagnosis

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Please provide insight how to differentiate sepsis when a viral vs. bacterial infection is present.

# Questions

## Patient Presentation/Diagnosis

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What are some pointers to help physicians in their differential diagnosis and to help nurses in their screening?

# Questions

## Patient Presentation/Diagnosis

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If a healthcare provider has a spouse who was diagnosed with COVID-19, should they self-quarantine with the spouse or family member? How soon should they do this? If they come to work, is wearing a mask appropriate protection for the clients they serve just because they have no symptoms?

# Questions

## Patient Presentation/Diagnosis

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Are COVID-19 viral septic patients having the same vasodilatory effects you see in bacterial sepsis? Do they require the same fluid resuscitation?



# Questions

## Patient Presentation/Diagnosis

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Are patients with central lines more at risk for COVID-19, similarly to their higher risk of bacterial/fungal infection due to the line being an additional and central potential entry point for the virus?

# Questions

## Patient Presentation/Diagnosis

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What is the correlation between hMPV and COVID-19, if any?

# Questions

## Patient Presentation/Diagnosis

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So if a person tested positive and has recovered, will this person still carry that virus and infect others? Is it just dormant and might reactivate later?

# Questions

## Clinical Treatment COVID-19

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If a person has sepsis and is not responding to any treatment, would a blood transfusion help?

# Questions

## Clinical Treatment COVID-19

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Is there any research or indication to collect a serum ferritin draw in relation to COVID-19 and infection?

# Questions

## Clinical Treatment COVID-19

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Can you describe experiences or recommendations around guided fluid resuscitation in the COVID-19 population and how it relates to sepsis?

# Questions

## Clinical Treatment COVID-19

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What about the sepsis fluid bolus and COVID-19? We are seeing COVID positive patients develop ARDS, and giving them a large fluid bolus will negatively affect a patient who develops ARDS. I understand CMS wants the full bolus no matter what, but what is best for the patient? Should we give the full bolus to potentially positive COVID-19 patients?

# Questions

## Clinical Treatment COVID-19

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What is considered safe PPE practice caring for a presumptive positive COVID-19 patient?

Can masks be reused and bagged to use for all patients in your care for an entire shift?



# Resources

- **CDC Healthcare Professionals: Frequently Asked Questions and Answers (updated 3-17-20) <https://www.cdc.gov/coronavirus/2019-ncov/hcp/faq.html>**
- **Covid-19 Open Research Dataset (CORD-19), research papers from peer-reviewed journals AI2's Semantic Scholar website <https://pages.semanticscholar.org/coronavirus-research>**
- **Number of cases of coronavirus (COVID-19) in the United States <https://www.statista.com/statistics/1102816/coronavirus-covid19-cases-number-us-americans-by-day>**
- **Society of Critical Care Medicine Critical Care for the Non-ICU Clinician: [sccm.org/covid19](https://www.sccm.org/covid19)**

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**Questions?**

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***SepsisInstitute.org***

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# Sponsor Innovation Webinar



## Challenges of Sepsis Diagnosis: Harnessing the Host Response

March 31 at 2PM ET / 11AM PT

Register at [SepsisInstitute.org](https://SepsisInstitute.org)

## Speaker:

Steven P. LaRosa, MD

*Staff Physician, Infectious Disease  
Beth Israel Lahey Health System*

*Support provided by Immunexpress*



# Sepsis: Across the Continuum of Care Webinar

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**Understanding the New  
Pediatric Sepsis Guidelines**  
April 14 at 2PM ET / 11AM PT  
Register at [SepsisInstitute.org](https://SepsisInstitute.org)

**Speaker:**  
Niranjan “Tex” Kissoon, MBBS, MD,  
FRCP(C), FAAP, MCCM, FACPE  
*Executive Medical Director  
Children’s and Women’s Global  
Health*

*Support provided by bioMérieux, Inc.*



# Jointly Presented Webinar: Sepsis Alliance and CHA

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## Recognizing Pediatric Sepsis: Through the Eyes of Patients & Families

April 21, 3-4:15 PM EST / 12-  
1:15PM PST

Register at [SepsisInstitute.org](https://SepsisInstitute.org)

## Speakers:

Kate Holler

Cathryn Jordan, BSN, RN, CHPON®

Nora Raynor, MSN, RN, CNS, CPN

Hannah Eichelberger



# Sponsor Innovation Webinar



## A Novel Program to Protect the Public from Coronavirus and Sepsis

April 22 at 2-2:45PM ET / 11-11:45AM PT

Register at [SepsisInstitute.org](https://SepsisInstitute.org)

## Speaker:

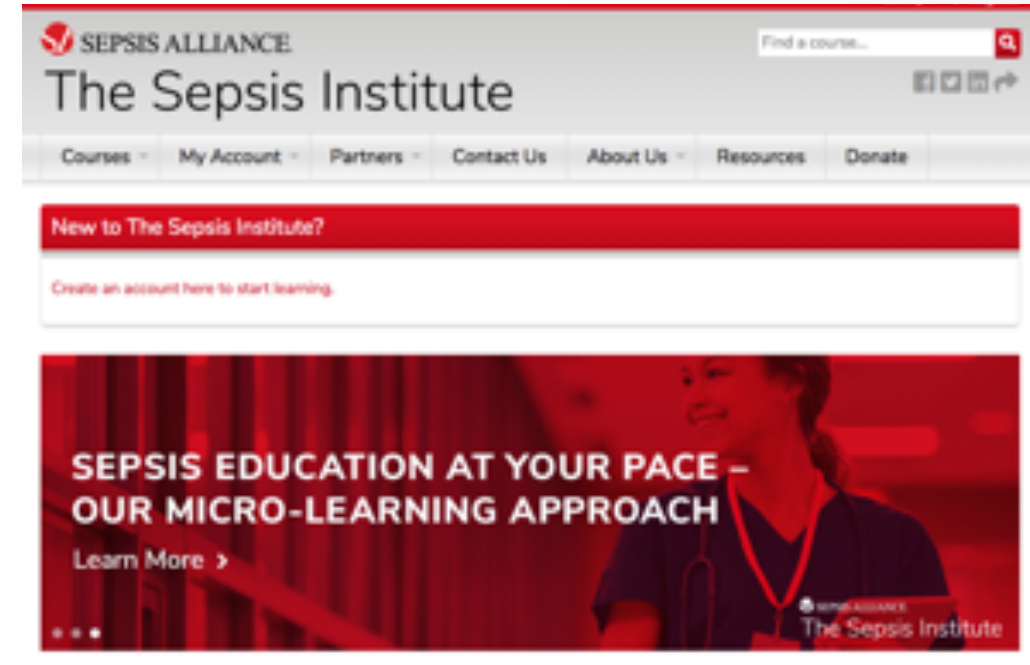
Thomas Ahrens, RN, PhD, FAAN  
*Chief Scientist and Learning Officer*  
*Viven Health*

*Support provided by Viven Health*



# The Sepsis Institute from Sepsis Alliance

- The Sepsis Institute (TSI) is an online learning platform that provides healthcare professionals across the continuum of care with **high quality, evidence-based sepsis education** and training to improve diagnosis and outcomes
- Led by Subject Matter Experts
- Micro-learning format
- Provides sepsis specific training modules, webinars, expert content, educational resources, etc.
  - *New – Sepsis: First Response*
- CE credits available at no cost



Join now at [SepsisInstitute.org](https://SepsisInstitute.org)



# Sepsis Coordinator Network



## Resources:

- **Educational webinars** that highlight sepsis best practices
- **Active discussion** and **peer support** via online forum, including one dedicated to discussions on [COVID-19](#)
- **Resource drive** with information on topics including core measures, clinical practice guidelines, patient screening, identification tools, education resources, and more

All active healthcare providers are welcome to join, including physicians, nurses, first responders, pharmacists, lab staff, etc.

Sponsors:



# Tools and Resources

- [Dedicated “Coronavirus \(COVID-19\) and Sepsis” page](#)
- [COVID-19: What You Need to Know video](#)
- Sepsis Information Guides
- Posters and Infographics

Stay up to date on COVID-19 related news and more by signing up for the newsletter at [sepsis.org](https://sepsis.org)



The screenshot shows the Sepsis Institute website. At the top, there is a navigation bar with 'Log In' and 'Register' links. Below that is a search bar with the text 'Find a course...'. The main header reads 'SEPSIS ALLIANCE The Sepsis Institute'. A secondary navigation bar includes 'Courses', 'My Account', 'Partners', 'Contact Us', 'About Us', 'Resources', and 'Donate'. The 'Resources' link is highlighted. Below the navigation, the page title is 'COVID-19 and Sepsis'. A large banner features the text 'COVID-19 & SEPSIS RESOURCE' over a colorful, abstract background. To the right of the banner is a red box with the text 'SEPSIS AND PREVENTION'. Below the banner, there is a paragraph of text: 'COVID-19 has drastically impacted the healthcare system across the continuum of care. Healthcare providers who are managing the virus, help your organization get ahead...'. To the right of this text is a small box with the text 'SEPSIS INFORMATION GUIDE'. Below the main text is a video player with the title 'What is COVID-19?' and a play button. The video player shows a woman, Karin Molander, speaking. To the right of the video player is a small box with the text 'SEPSIS AND PREVENTION'.

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**Thank you!**

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