



CLADE X  
A PANDEMIC EXERCISE

# Clade: klād/

A **clade** (from Ancient Greek: *κλάδος* or *klados*, meaning "branch") is a group of organisms that consists of a common ancestor and all its lineal descendants, representing a single "branch" on the "tree of life."

# **EXCOMM Meeting #1**

**May 15, 2018**

Four weeks after onset of first illness

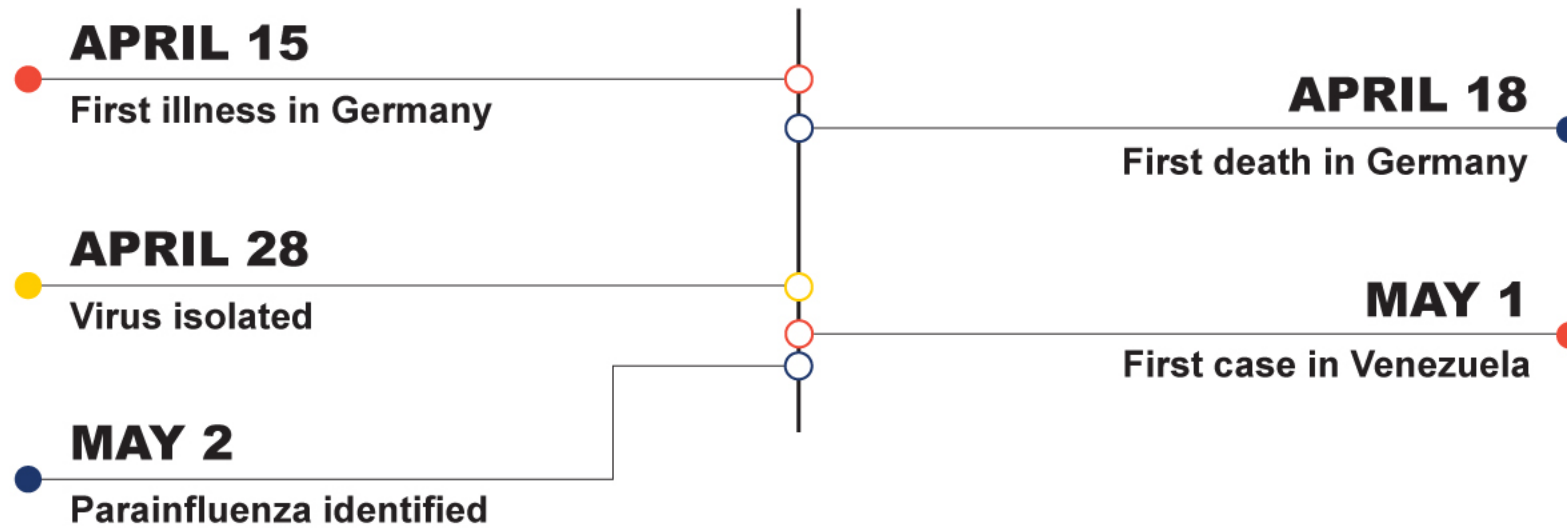


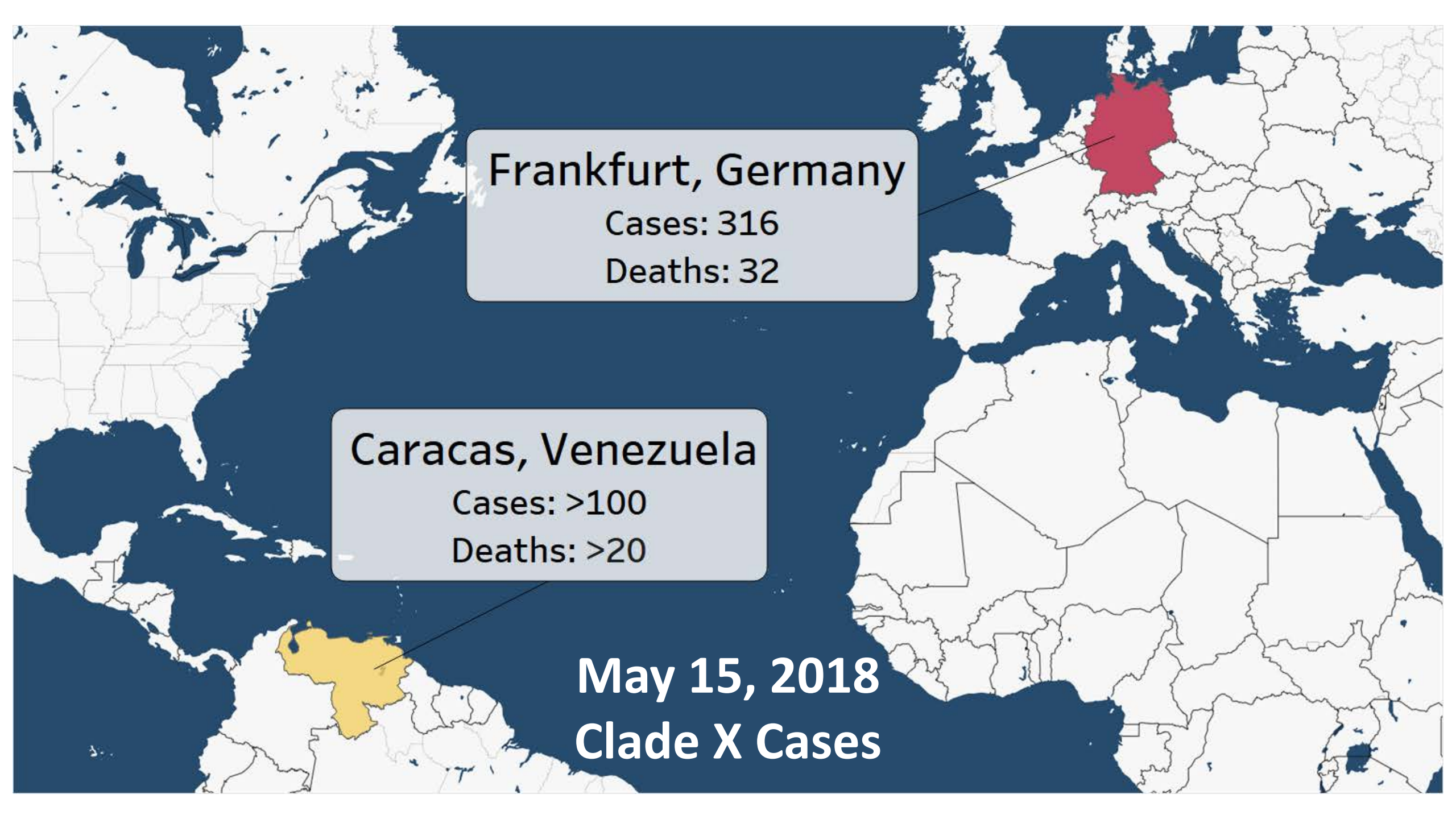
# GNN Video Update 1



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# Clade X Timeline



A world map with a dark blue background and white landmasses. Two countries are highlighted: Germany in red and Venezuela in yellow. Two callout boxes provide case and death statistics for Frankfurt, Germany and Caracas, Venezuela. A date and clade name are also displayed.

**Frankfurt, Germany**

Cases: 316

Deaths: 32

**Caracas, Venezuela**

Cases: >100

Deaths: >20

**May 15, 2018**  
**Clade X Cases**

# May 15: NSC Staff Briefing

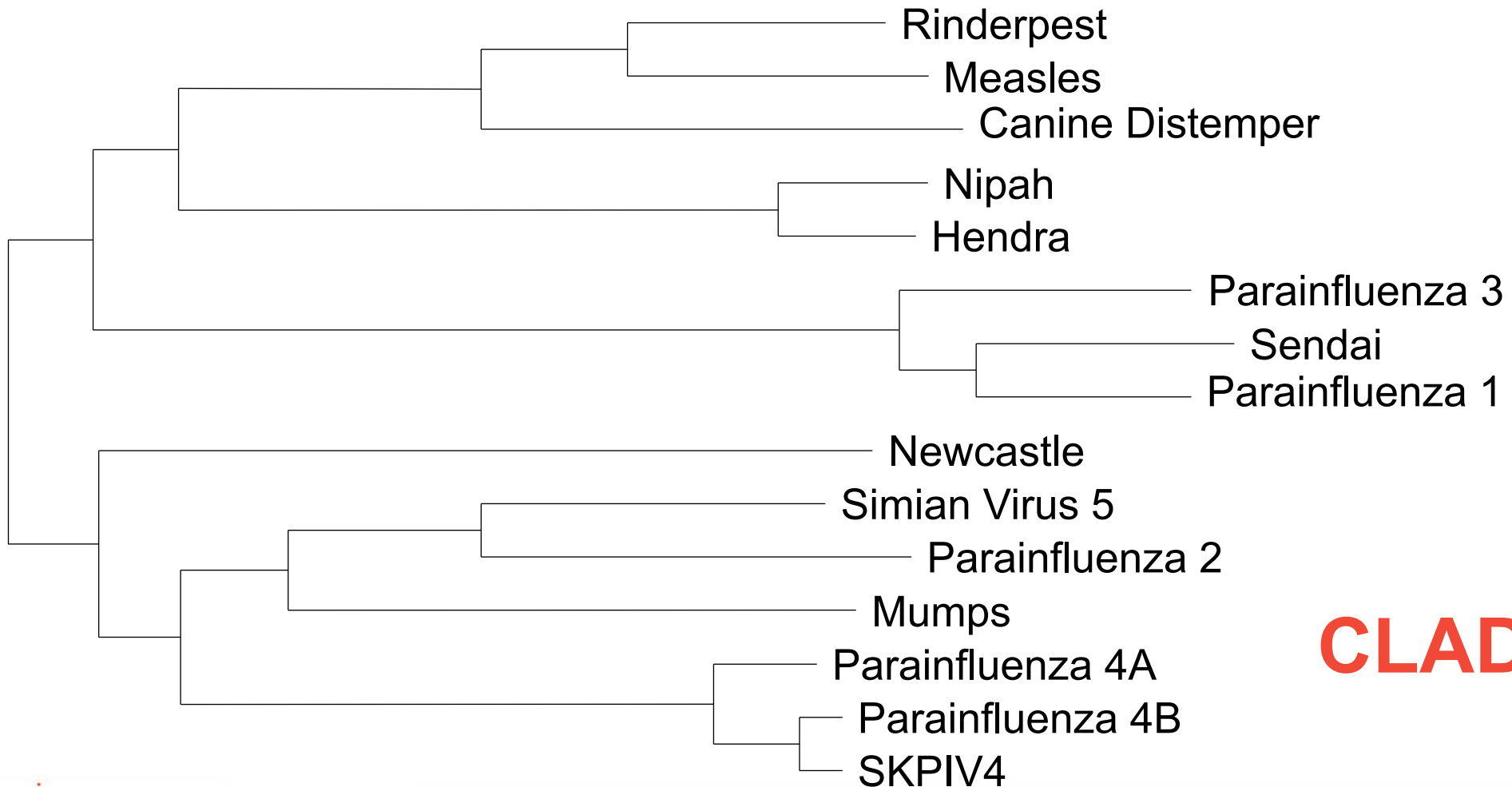
- True origin of the Clade X pathogen is unknown
- Probable spread to Venezuela by air travel from Frankfurt
- Reports of possible cases in London, Tokyo, Taipei, and Kabul
- Surveillance is poor in many countries

# May 15: NSC Staff Briefing

- More than 10% of infected individuals have died
- Transmitted from person to person through the air
- Infectious individuals transmit the illness to about 2-3 other people
- Incubation period is approximately 5-7 days



# Human Parainfluenza Phylogeny



**CLADE X?**



# Clade X Medical Countermeasures

- No known antivirals
  - Thousands of licensed drugs being screened
- Parainfluenza virus vaccines in development for years
  - None are licensed
  - Unlikely to be effective against Clade X
- Vaccine research for the Clade X virus has begun
  - It will likely take >12 months to have a vaccine

# May 15: NSC Staff Briefing

- Clade X has pandemic potential
- CDC developed a PCR test
- CDC issued travel alerts for Germany and Venezuela
  - Fever screening at US airports for direct flights from Germany and Venezuela
- CDC issued alerts to health departments and hospitals
  - Suspect cases should be isolated and reported to CDC

What are you most worried about?

What should the government's highest priorities be?



# GNN Video Update 2



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# May 15: NSC Staff Briefing

- Screening may miss people with mild disease or who are incubating
- Australia, China, and Singapore have closed down all travel from Germany and Venezuela
- A recent poll shows that 65% of the public is in favor of suspending all travel from Germany and Venezuela
- The US has \$170 billion in annual trade with Germany
- 40,000 travelers from Germany to the US each week
- Suspending travel violates WHO and WTO agreements

Should the President issue an executive order to suspend air travel to the US from Germany and Venezuela?



# GNN Video Update 3



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# May 15: NSC Staff Briefing

- WHO is requesting US medical teams for Venezuela
- Venezuela may be willing to accept US medical assistance
- Interagency has developed an option for response:
  - 6 DMAT teams, 2 DOD Combat Support Hospitals
  - 750 medical personnel, 330 beds
  - Unprecedented for an infectious disease emergency

Should the US send a substantial  
medical response to Venezuela?



# GNN Video Update 4



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# **EXCOMM Meeting #2**

**June 1, 2018**

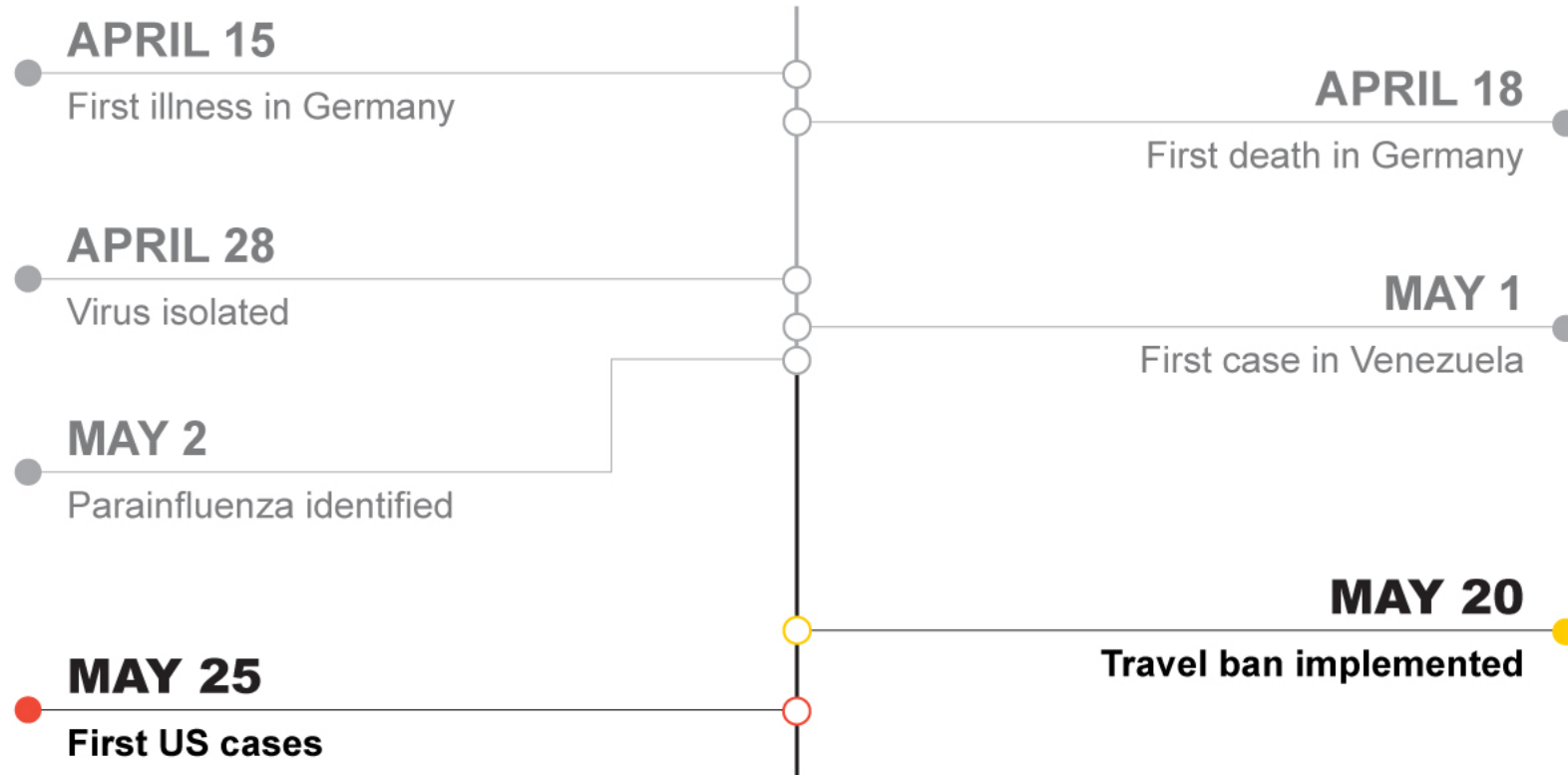
Six weeks after onset of the first illness



# Clade X Situation Update

- President issued a 4-week suspension for all travel from Germany and Venezuela
- President decided against deploying medical aid to Venezuela
- Preliminary analysis suggests that the Clade X virus could have been deliberately engineered
- First suspected cases of Clade X in the US have been reported

# Clade X Timeline



# GNN Video Update 5



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# A Brighter Dawn (ABD)

- International group focused on overpopulation
- No past history of violence
- Well funded
- Local chapters in several countries, including the US
  - FBI has identified multiple US members
  - One is a parainfluenza researcher whose whereabouts are unknown
  - All other known US members have been detained



# ABD Investigation

- Analysis of the group's social media accounts now indicate a schism in ABD
- An ABD splinter group may be responsible for release of Clade X
- ABD uploaded a video to YouTube claiming responsibility
  - Efforts were made to conceal its origin

# ABD Investigation

- The intel community is working to locate perpetrators
  - The FBI is lead agency of the investigation
  - Foreign intel services are conducting similar investigations
- Investigation is hampered by limited biological expertise in the intel and law enforcement agencies

# Clade X Virus Synthesis

- Genes for neurologic virulence of Nipah have been inserted into the parainfluenza genome
  - Virologists with special training and a reasonably outfitted laboratory could make the virus
- ABD has probably been working on this for a long time
- Animals and perhaps humans were likely used for testing

# June 1: NSC Staff Briefing

- CBP has increased airport screening and banned all liquids and powders on inbound international flights
  - CBP is attempting to open and search all luggage
  - All liquids or powders found are being destroyed
- This has caused air traffic to grind to a halt
- There is no way to screen most freight traffic
- DHS is working with CDC to incorporate Clade X into BioWatch
- NBACC is working to understand nature of the virus

This appears to be a biological weapon.  
How does this change our response?



# GNN Video Update 6



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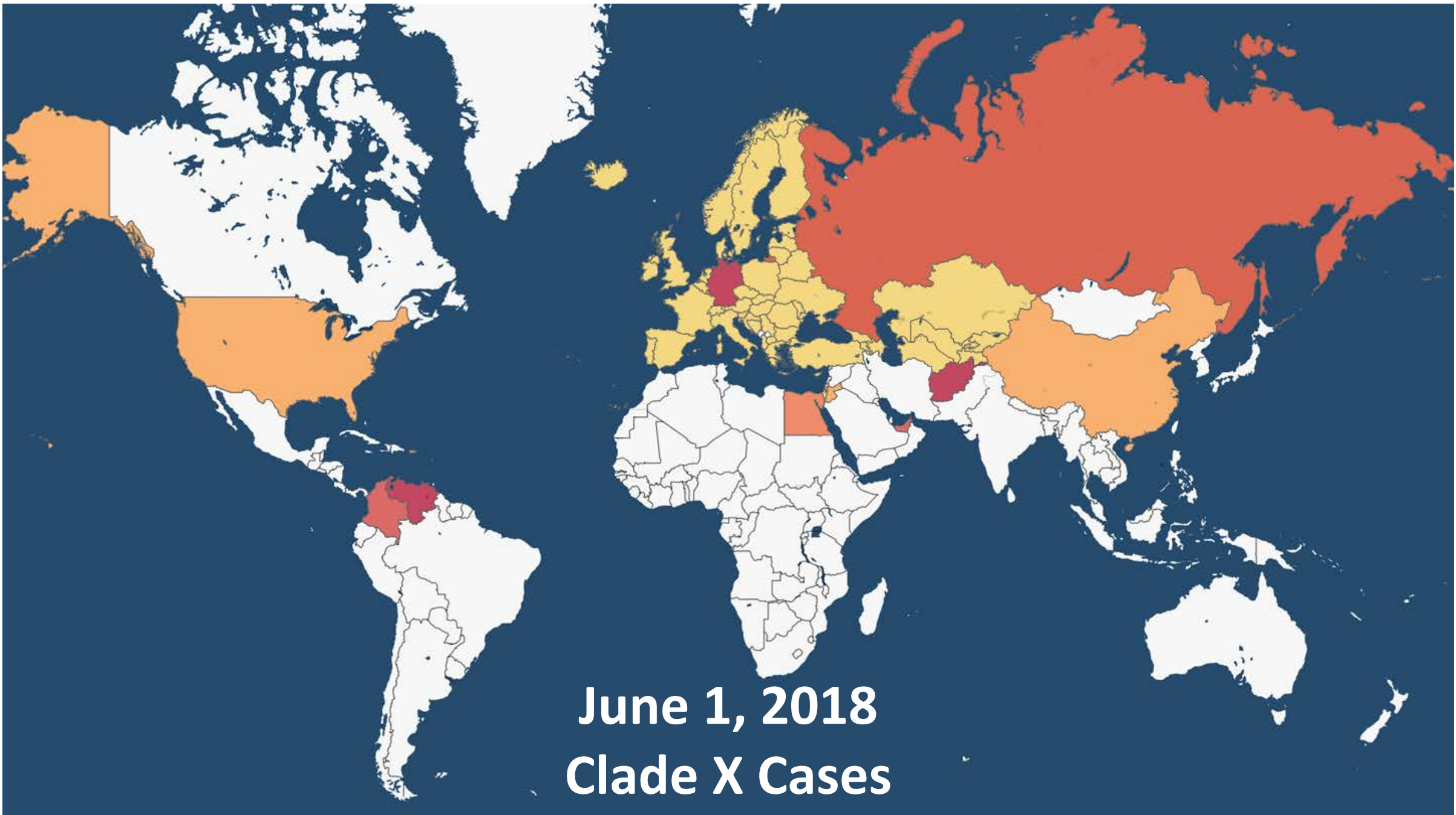
# June 1: NSC Staff Briefing

- If the President decides to federalize the quarantine, we would need to:
  - Organize logistics for food, water, and other supplies
  - Provide medical care for quarantined individuals
  - Arrange for due process
  - Federalize the National Guard and/or bring in US marshals
  - Determine level of force authorized to maintain quarantine
- A federalized mass quarantine would be unprecedented

Should the President assert federal control to enforce the quarantine in Massachusetts?







**June 1, 2018**  
**Clade X Cases**

# June 1: Probable & Confirmed Cases

	Cases	Deaths
Germany	2177	216
Venezuela	>1,000	>250
Afghanistan	>1,000	>100
Hong Kong	187	17
Europe (other)	158	4
UAE	151	14

	Cases	Deaths
Colombia	120	5
Russia	130	12
Egypt	100	10
Jordan	13	2
United States	12	1
China	8	1
<b>Total</b>	<b>&gt;5,056</b>	<b>&gt;632</b>

# June 1: NSC Staff Briefing

- Large outbreak in Afghanistan confirmed as Clade X
- Hospitals in all of these countries are struggling
- WHO says that there have been a number of outbreaks in hospitals
  - 10% of confirmed cases are healthcare workers
- Most confirmed cases require intensive care
  - 20% death rate among those hospitalized

# June 1: NSC Staff Briefing

- Options for medical countermeasures and diagnostics are being explored
- Vaccine research is proceeding on multiple fronts in multiple countries
- Medical supply shortages are being reported across the US

# June 1: NSC Staff Briefing

- Many patients have very mild illness but may still be contagious
- Modeling suggests a severe pandemic is possible if Clade X is not contained soon
- The President declared a national state of emergency
- HHS Secretary declared a public health emergency



# Military Challenges

- Kabul and Helmand provinces in Afghanistan have large outbreaks
  - Local medical facilities are overwhelmed
- A dozen US troops have Clade X and are in critical condition
  - Evacuation to the US is very difficult
- Combatant Commanders concerned about effect on force readiness
- Force Protection Level increased for military installations around the world

Do you recommend to the President that we start bringing US personnel home from affected countries?

If so, whom do we bring home?



# GNN Video Update 7



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# **EXCOMM Meeting #3**

**June 17, 2018**

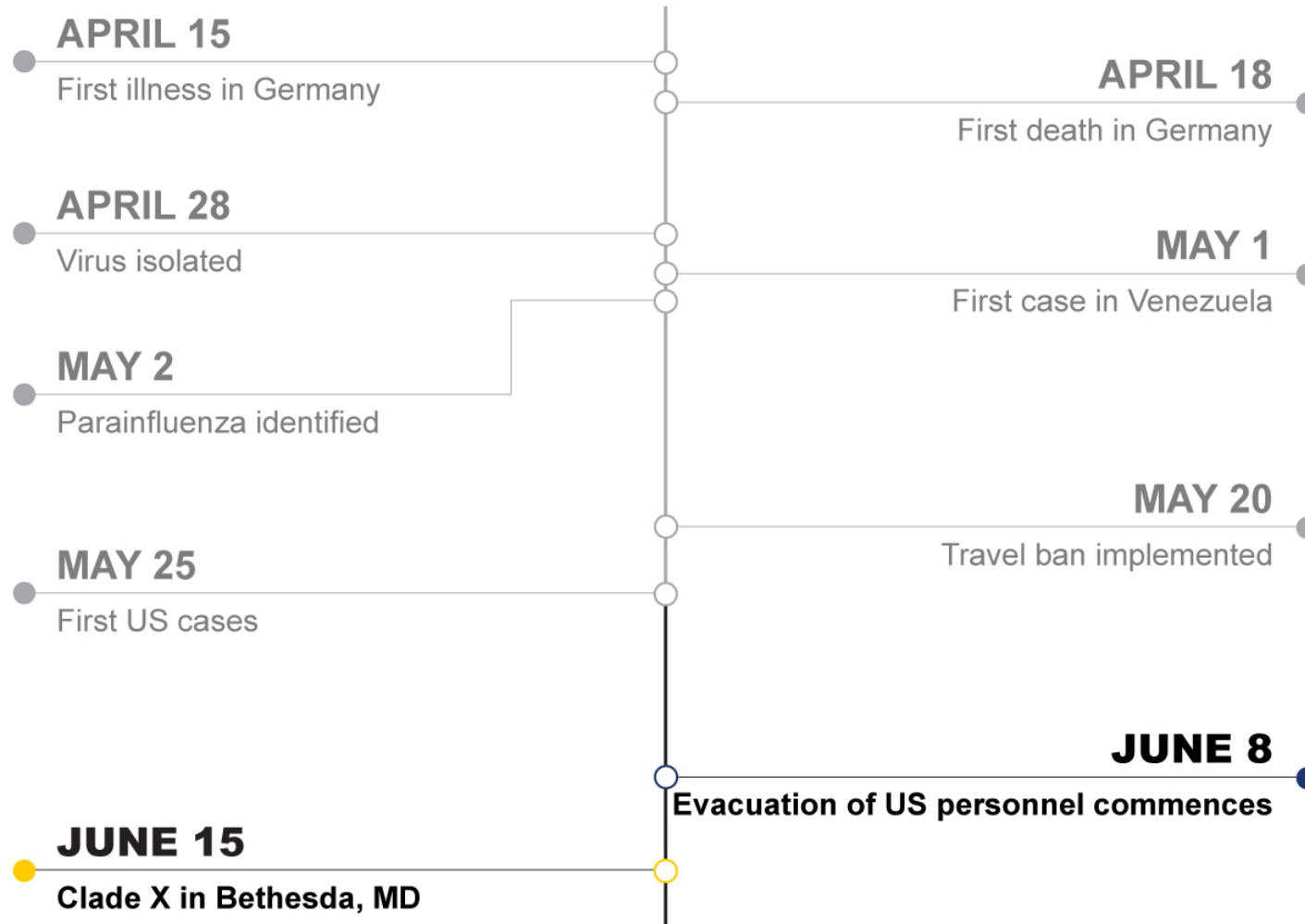
**Eight weeks after onset of the first illness**



# Clade X Situation Update

- Massachusetts governor agreed to maintain quarantine
- No ABD perpetrators have been located
- DOD created isolation units in the US for DOD Clade X patients
- All high-level isolation units in the US are full
- Remainder of sick US personnel are being treated overseas
- Mass evacuation of nonessential personnel and dependents is planned
- New major Clade X outbreak in Bethesda, MD

# Clade X Timeline



# GNN Video Update 8



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# Bethesda Outbreak

- 51 cases in Bethesda and DC, and most are critically ill
- Area ICUs are already exceeding capacity
- Hospitals cannot handle more than 1-2 Clade X patients at a time



**June 17, 2018**  
**Clade X Cases**

# June 17: Probable & Confirmed Cases

	Cases	Deaths
<b>Afghanistan</b>	10,000	900
<b>Venezuela</b>	7,650	3,420
<b>Germany</b>	7,250	354
<b>Europe (other)</b>	3,650	1,846
<b>Hong Kong</b>	1,600	135
<b>UAE</b>	1,100	100
<b>Colombia</b>	850	380
<b>Russia</b>	575	42

	Cases	Deaths
<b>India</b>	412	72
<b>Egypt</b>	387	75
<b>China</b>	289	29
<b>Jordan</b>	135	15
<b>Indonesia</b>	120	15
<b>Somalia</b>	73	10
<b>United States</b>	63	3
<b>S. America (other)</b>	30	3
<b>Total</b>	<b>34,172</b>	<b>7,399</b>

# Severe Pandemic Possible

- No pre-existing immunity
- About half of patients have mild illness but are still contagious
- The other half experience severe symptoms
  - Approximately 20% of those will die, even with good medical care
- Rapidly rising case fatality in areas where hospitals are failing
- Modeling suggests possibility of 0.5-2 million US deaths over the next year and >50 million globally



# GNN Video Update 9



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(Followed by discussion  
prior to GNN Video 10 on  
next slide)

# GNN Video Update 10



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# June 17: NSC Staff Briefing

- DC area ICUs are full and trying to transfer some Clade X patients
- Some potential receiving hospitals are refusing to accept transfers
- Vast majority of US hospitals are privately owned
  - Federal government has limited authority over private hospital operations
- DOD and VA hospitals are already at capacity

What should we do about hospitals that refuse to accept Clade X patients?



# Military Situation in Jordan

- Severe Clade X outbreak in Jordan
- Terrorist groups have taken the city of Mafraq
- Jordanian forces cannot repel these groups on their own
  - The government of Jordan is requesting assistance
  - Israel also requests that the US respond
- US would send a brigade of about 4,500 personnel
  - Approximately 3-6 months
  - May put troops at significant risk of Clade X

Should we deploy military personnel  
to assist Jordan?



# GNN Video Update 11



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# **EXCOMM Meeting #4**

**September 15, 2018**

**5 months after onset of the first illness**

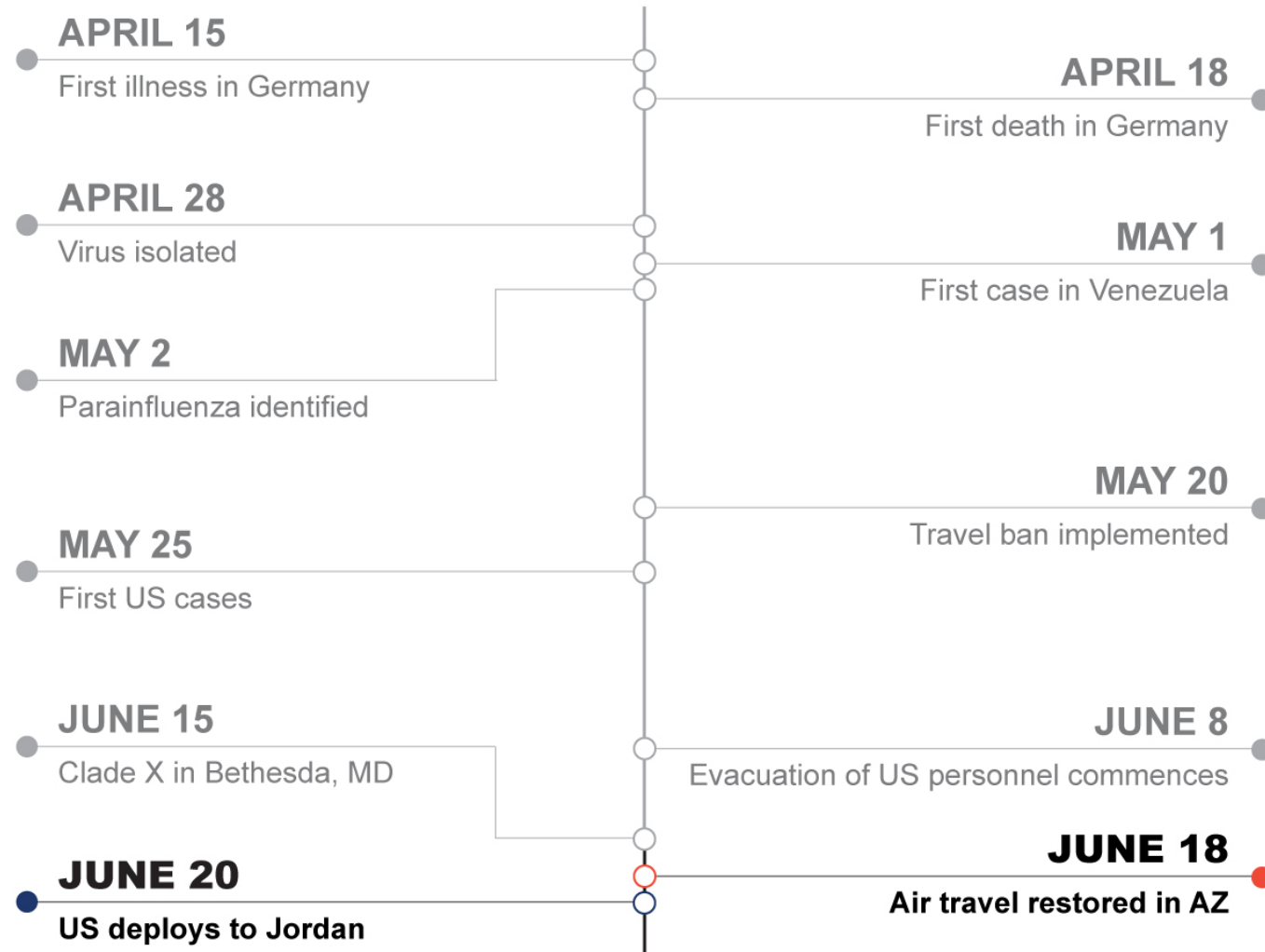




# Clade X Situation Update

- US deployed brigade to Jordan
  - Many US troops have died from Clade X
- HHS has provided major medical centers with extra funding and training to care for Clade X patients
- The President met with the National Governor's Association, and the Arizona governor relented
  - Commercial air travel restored, but volume is still down 43%

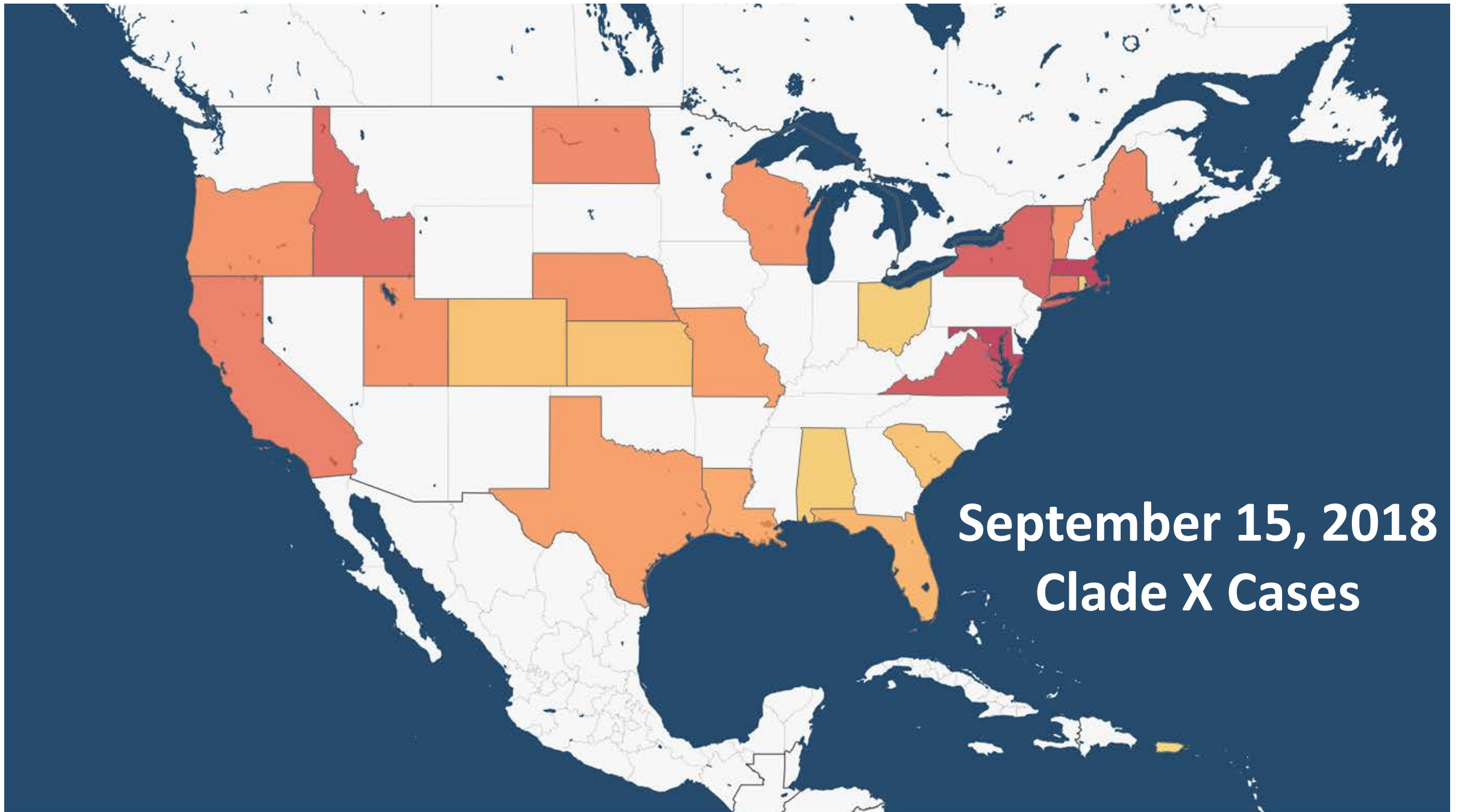
# Clade X Timeline



# GNN Video Update 12



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**September 15, 2018**  
**Clade X Cases**

# September 15: US Probable & Confirmed Cases

	Cases	Deaths
Bethesda/DC	25,603	1,349
S. Norwich, MA	21,349	1,134
Roanoke, VA	5,426	551
Albany, NY	1,791	147
Coeur D'Alene, ID	981	108
Norwich, CT	599	66
California, MD	320	39
Hanford, CA	310	30
Salisbury, MD	194	19
Bismarck, ND	154	15

	Cases	Deaths
Augusta, ME	124	11
Burlington, VT	103	8
Logan, UT	102	14
Grand Island, NE	87	8
Bend, OR	86	9
Racine, WI	65	5
Modesto, CA	49	7
Columbia, MO	48	5
Sherman, TX	43	7
19 Others w/ <20 cases	83	11
<b>Total</b>	<b>57,517</b>	<b>3,543</b>

# September 15: NSC Staff Briefing

- Many domestic hospitals are failing
- CDC encouraging telework and social distancing
  - Many schools have closed nationwide
  - Many public gatherings are cancelled
- Public demand for surgical masks and respirators is surging
- Multiple states have deployed National Guard to provide security at pharmacies and hospitals
- States are considering canceling in-person voting for the 2018 elections



**September 15, 2018**  
**Clade X Cases**

# September 15: Global Probable & Confirmed Cases

WHO Region	Cases	Deaths
Eastern Mediterranean	3,539,500	1,327,400
Western Pacific	3,350,000	1,210,000
Americas	1,163,500	354,000
Europe	258,300	100,000
South-East Asia	212,100	90,000
Africa	145,000	25,000
<b>TOTAL</b>	<b>~8,668,400</b>	<b>~3,106,400</b>



# September 15: NSC Staff Briefing

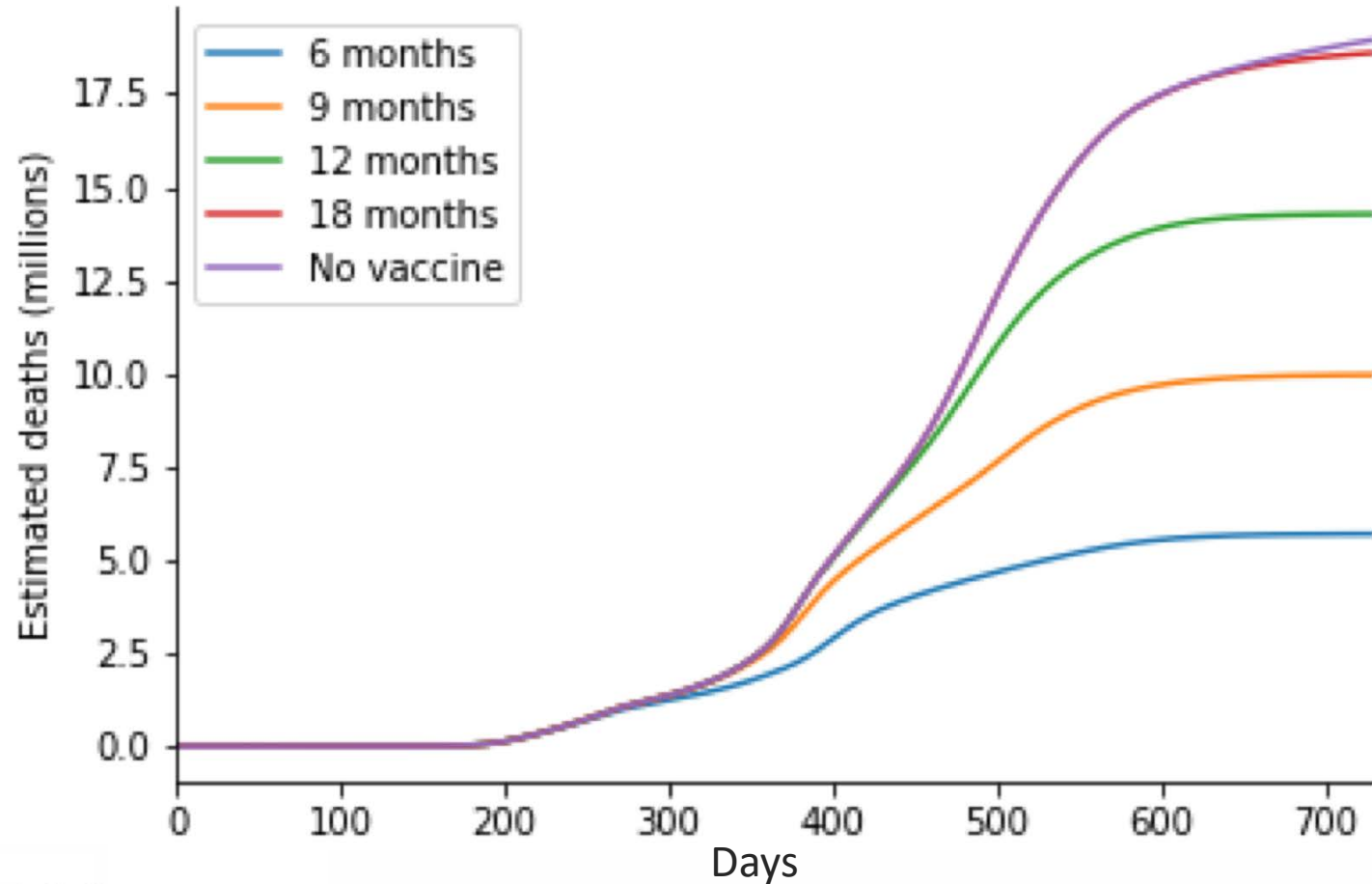
- High transmission in megacities
- Patients are being turned away from hospitals; many are dying at home
- Some countries have deployed military to keep order and secure borders
- Many are blaming immigrants/minorities for disease spread
- Widespread looting has led to violent crackdowns by some governments
- Several national governments have fallen
- Catastrophic outcome is likely unless a vaccine is deployed soon

# Clade X Vaccines

- Azalea Pharmaceuticals
  - Working with other companies, HHS, and FDA to test and manufacture the vaccine
  - Could be enough vaccine for 80% of the US population in 6-9 months
  - Azalea will license the vaccine for production in other countries
- Initial production capacity expected to be 5 million doses/month
- Vaccine will confer immunity ~1 month after vaccination
  - More than 1 dose may be required
- This would be the fastest that a vaccine for a novel virus has ever been produced

# Clade X Mortality vs. Vaccine Timing

Estimated cumulative deaths after 2 years



# How Best to Allocate Vaccine?

## Option 1: Prioritize those with key societal functions

- Healthcare workers and scientists working on the vaccine may ensure more people are vaccinated
- Government officials to ensure continuity of government
- Critical infrastructure to ensure function of essential services
- Business leaders to help prevent economic collapse

## Option 2: Prioritize those most likely to benefit

- People most severely affected by the virus to save more lives
- Children to help reduce Clade X transmission and preserve future societal function
- Pregnant women to preserve health of future generations

## Option 3: Lottery

- Everyone has an equal chance of being selected to receive the vaccine when it becomes available

# How Best to Allocate Vaccine?

## Option 1: Prioritize those with key societal functions

Healthcare workers	16 million
Transportation, shipping, and aviation	5 million
Federal government	3 million
Military	3 million
First responders (eg, police, firefighters, EMTs)	2 million
Public utilities	0.5 million
<b>TOTAL</b>	<b>29.5 million</b>

## Option 2: Prioritize those most likely to benefit

>65 years old	49 million
<4 years old	20 million
Immunosuppressed	10 million
Pregnant	6 million
<b>TOTAL</b>	<b>85 million</b>

# GNN Video Update: Epilogue



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# Implications of Clade X for National Policy

1. Capability to produce vaccines and drugs for novel pathogens within months not years
2. Strong and sustainable global health security system
3. Robust, highly capable national public health system that can manage the challenges of pandemic response
4. National plan to effectively harness all US healthcare assets in a catastrophic pandemic
5. International strategy for addressing research that increases pandemic risks
6. National security community well prepared to prevent, detect, and respond to infectious disease emergencies

# Hotwash

- What will you take away from this event?
- What was the most surprising aspect?
- What should the US government (and other governments) be doing differently?





CLADE X  
A PANDEMIC EXERCISE

[centerforhealthsecurity.org/cladex](https://centerforhealthsecurity.org/cladex)