

*Candida auris-*  
a yeast behaving  
badly

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SHA



The New York Times

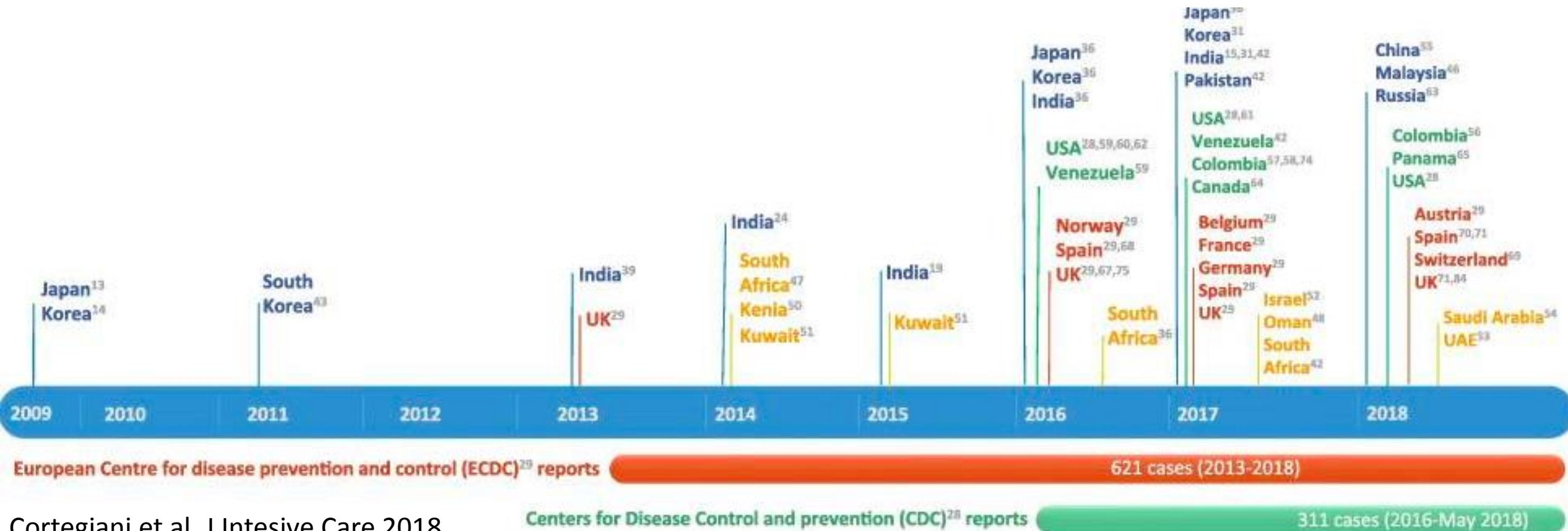


DEADLY GERMS, LOST CURES

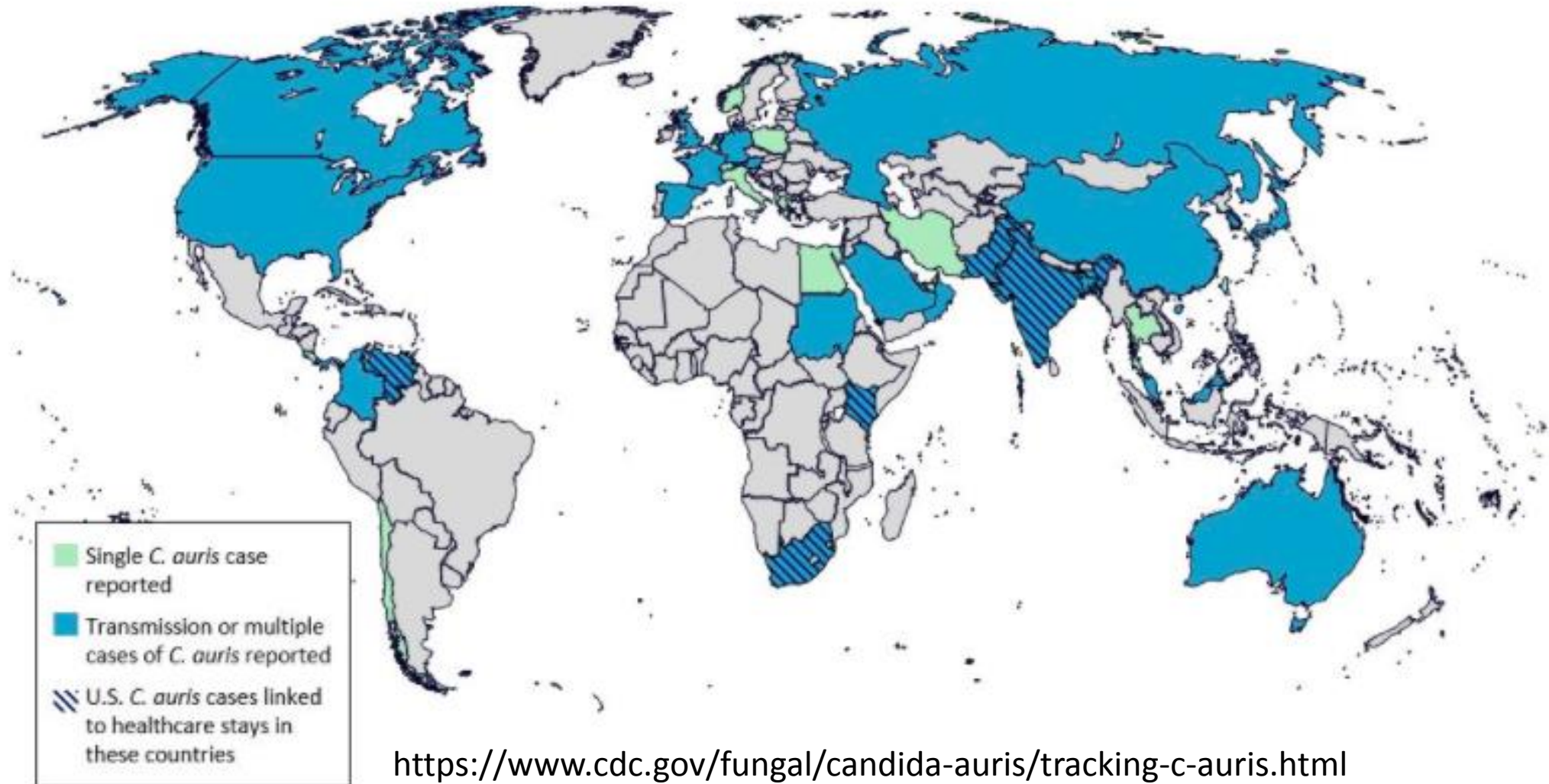
## *A Mysterious Infection, Spanning the Globe in a Climate of Secrecy*

The rise of *Candida auris* embodies a serious and growing public health threat: drug-resistant germs.

# *C. auris* Epidemiology



# Countries from which *Candida auris* cases have been reported, as of June 30, 2020

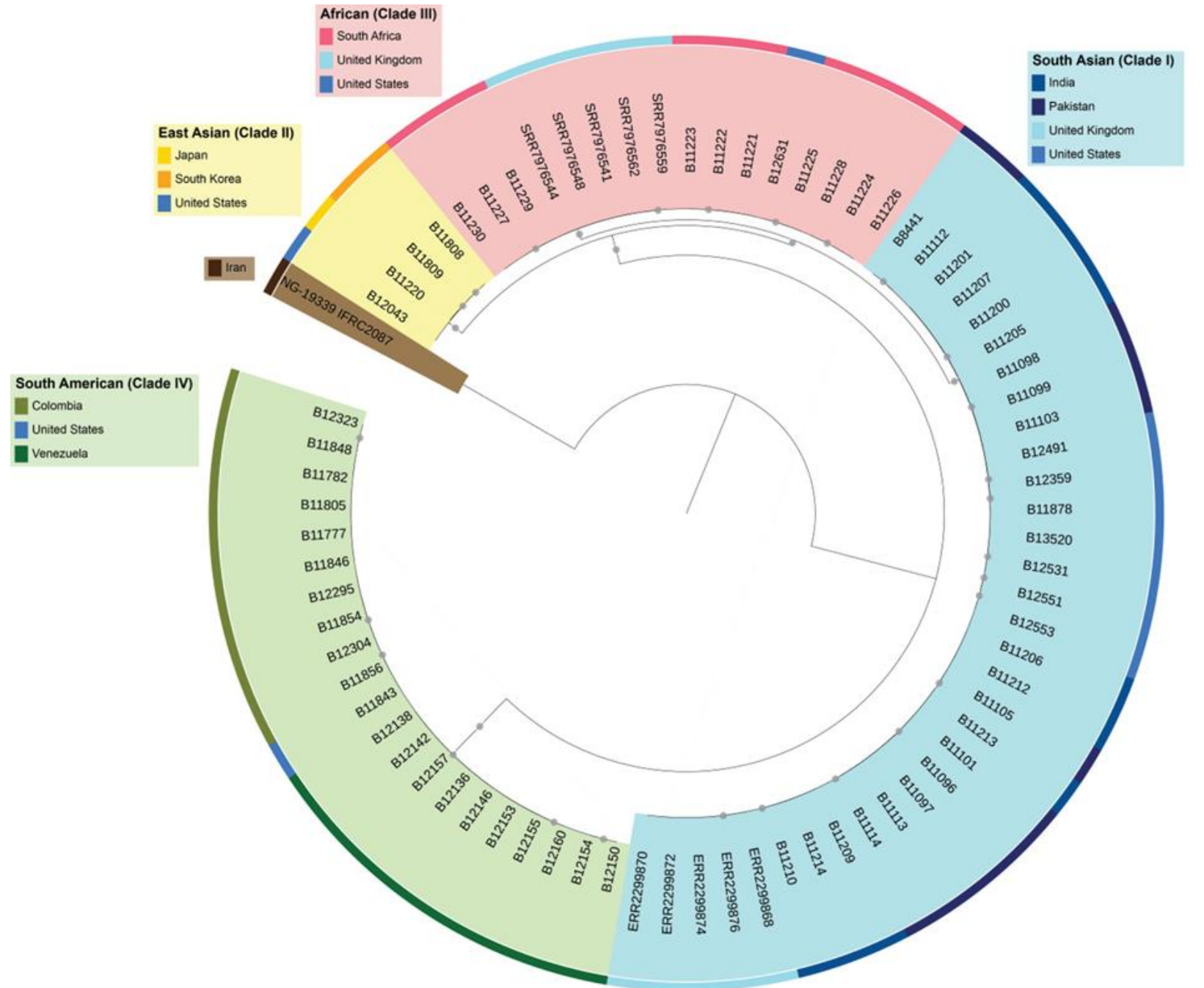


# Why the 7 year gap?

- 2009-2016 very few reports of *C. auris*
- Retrospective analysis
  - 1996- isolate from blood stream infection in a peds surgery patient from Korea
  - 2008- isolate from Pakistan
  - 2009-2015 SENTRY antifungal surveillance program identified 4 *C. auris* from 15 271 candidemia isolates from 152 international medical centers
- Unknown!

# 5 major CLADES emerged

- Simultaneous emergence of different clonal populations on 3 different continents rather than spread from a single source



# Worldwide prevalence ???

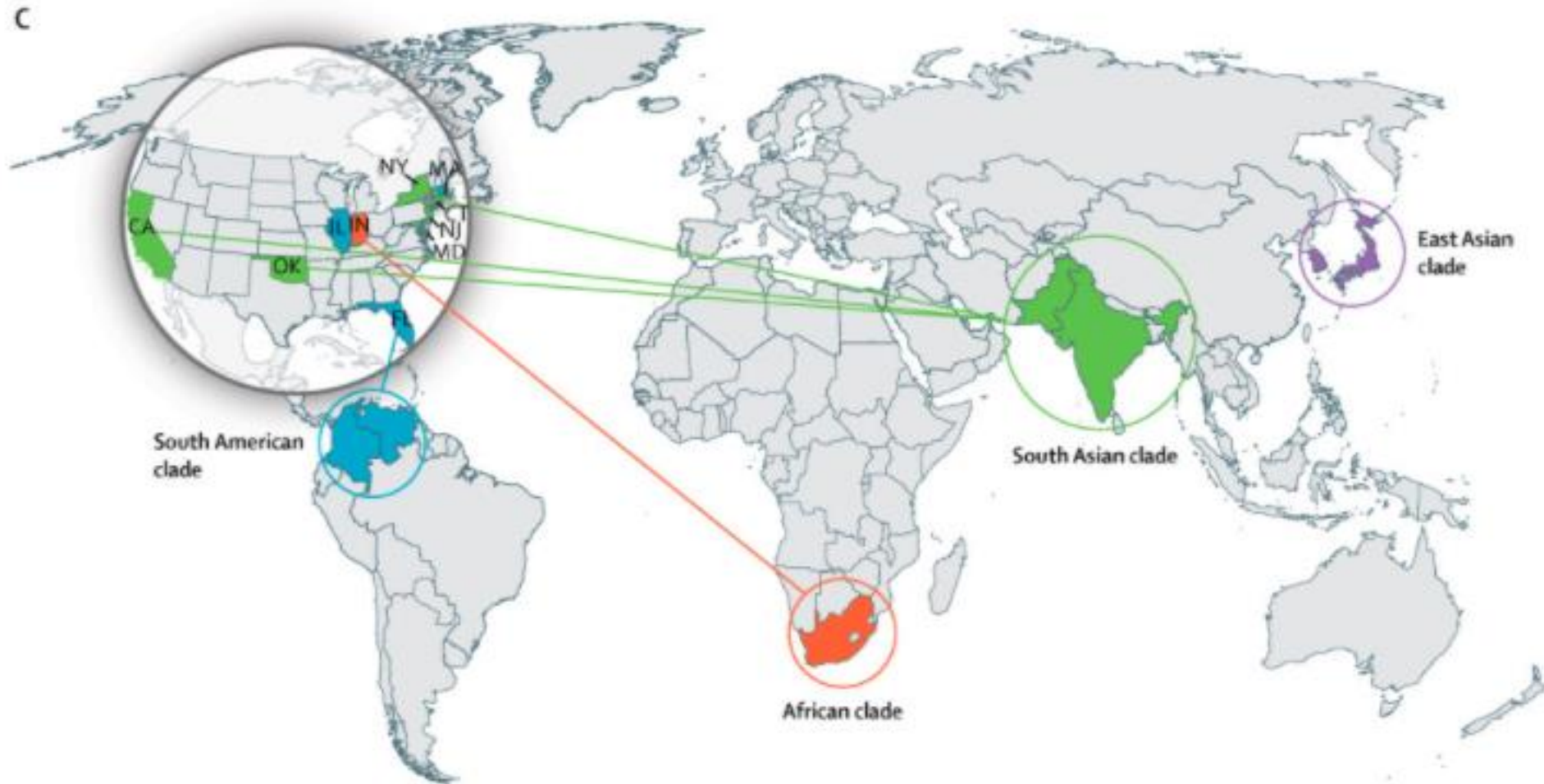
- Real prevalence remains uncertain
- Venezuela -outbreak in 2012
  - over 5 months, *C. auris* was the 6<sup>th</sup> most common cause of Candidemia
- South Africa -outbreak in 2012
  - over 3 year period 38% of all candidemia cases in a reference hospital in Kenya
- India- outbreak in 2013
  - now *C.auris* prevalence 5-30% of all Candidemia cases
- Spain outbreak- in 2016
  - largest ongoing clonal outbreak

# The US experience

- Clinical alert issued in US in 2016 after 7 cases reported over 3 year period
  - 2018- 311 cases
  - 2020- 1200 cases
- Initial cases were a result of hospitalization in a country known to have high prevalence of *C. auris*
  - Hospitalized weeks to couple years prior to diagnosis
- Subsequent cases a result of local hospital transmission

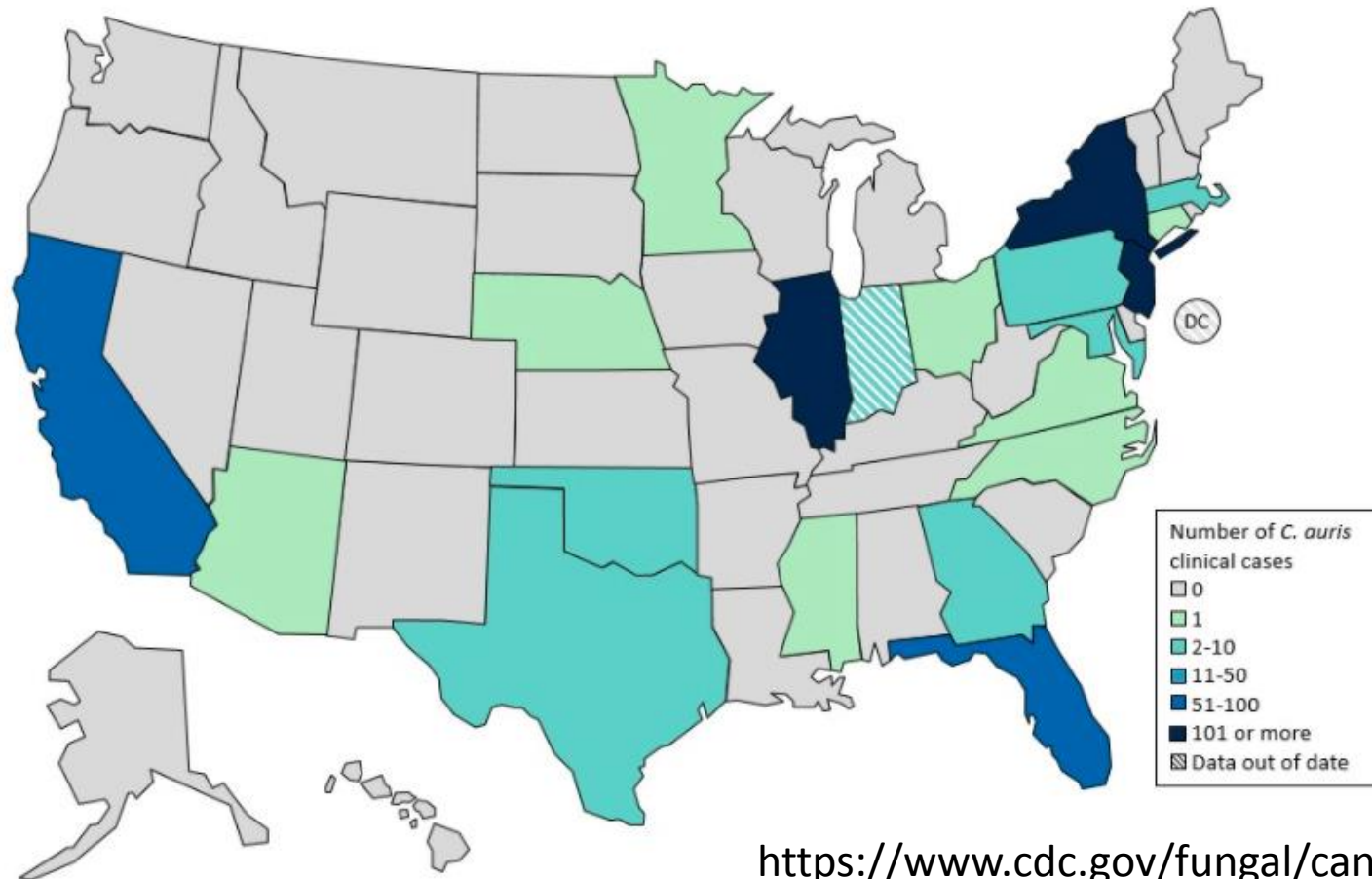


# *C. auris* imported to North America



# *C. auris* outbreaks across US

U.S. Map: Clinical cases of *Candida auris* reported by U.S. states, as of June 30, 2020



# The Canadian Experience

[Antimicrob Resist Infect Control](#). 2020; 9: 82. PMID: PMC7288437  
Published online 2020 Jun 10. PMID: [32522237](#)  
doi: [10.1186/s13756-020-00752-3](#)

Prevalence of *Candida auris* in Canadian acute care hospitals among at-risk patients, 2018

[Hector Felipe Garcia-Jeldes](#),<sup>1</sup> [Robyn Mitchell](#),<sup>2</sup> [Allison McGeer](#),<sup>3</sup>  
[Wallis Rudnick](#),<sup>2</sup> [Kanchana Amaratunga](#),<sup>2</sup> [Snigdha Vallabhaneni](#),<sup>4</sup>  
[Shawn R. Lockhart](#),<sup>4</sup> CNISP *C. auris* Interest Group, and [Amrita Bharat](#)<sup>5</sup>

- First Case of *C. auris* in 2017 in a patient who had received health care in the Indian subcontinent and was co-colonized with CPO
- March 2020- 24 cases reported to PHAC
- Estimated prevalence is very low- 0.4%

# *C. auris*- a yeast that acts like a bacterium ?

- Thrives on skin
- Persists for weeks on surfaces and equipment
- Multi Drug-resistant
- Can spread in healthcare settings causing OUTBREAKS of INVASIVE INFECTIONS

# Clinical presentation- wide spectrum

- Colonization



- Superficial skin infection



- Invasive infections
  - Most often deemed to be HAI
  - 44-72% mortality

# Risk factors for severe disease

- Sickest of the sick
  - Ventilator dependent
  - Catheterized
  - Tube-fed
  - Bed bound
  - Recent treatment with antibiotics and antifungals
  - Often colonized with other MDR organisms
- Not a threat to healthy individuals
  - Not more invasive than other *Candida* species



# *C. auris*- on humans

- Colonizes skin- nares, groin and axilla most common
  - Survives very well at body temperatures and higher! (up to 42°C)
- Persist for many months- indefinitely?
  - No decolonization strategies
- Associated with colonization with other MDR organisms ex. CPOs
- Can develop MDR upon exposure to antifungals

# *C. auris*- in the environment

- High touch surfaces most commonly contaminated
  - Including mobile equipment (sat probe, vitals machine)
- Can survive over a month on surfaces
- Resistant to some common disinfectants (quaternary ammonium products)
- Reliably susceptible to sporicidal agents



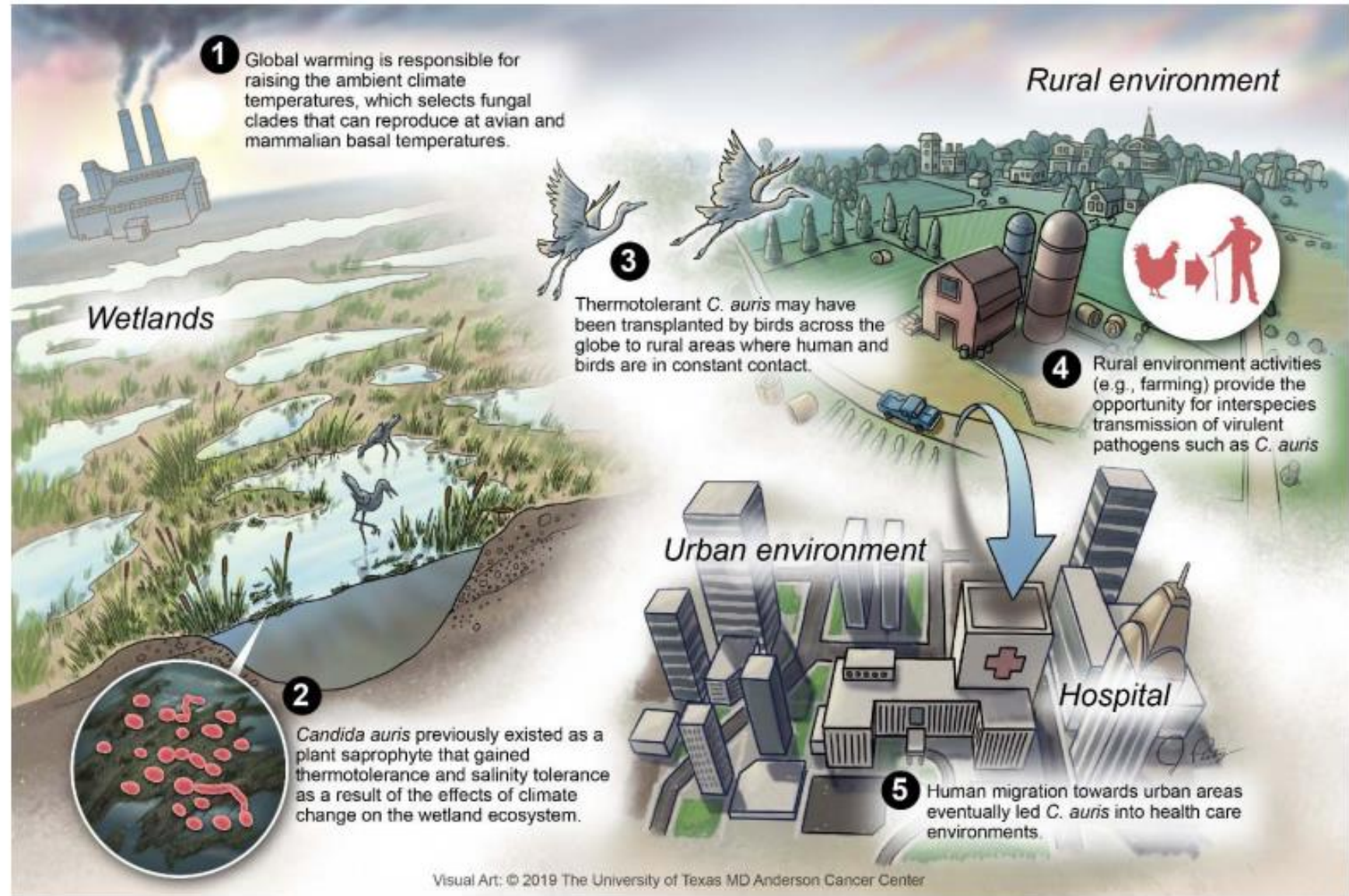
# Perfect recipe for Transmission

- Wide spread transmission after introduced into the environment

# How did it emerge?

- Proposed theory related to climate change
- Unknown!

Figure 2. Proposed scheme for the emergence of *C. auris*.



# Prevention- a multifaceted approach

- Screening patients with hx of hospitalization abroad in last 12 mo
  - A chromogenic screening agar and molecular based assays now available
    - Cost of screening outweighs the benefit of detection in low prevalence setting like SK
  - Potential for centralized laboratory testing with pre-emptive isolation of these patients until results available

# Prevention- a multifaceted approach

- Early identification from clinical specimens
  - Full yeast ID on isolates from sterile body sites only
    - elsewhere considered normal flora
  - Misidentification still a problem for sites using non-MALDI TOB identification
    - Awareness is key

# Prevention- the basics

- Consistent use of PPE and Hand Hygiene
- Environmental cleaning- high touch surfaces, shared medical equipemtn
  - Products active against C. diff spores
- Antibiotic and Antifungal stewardship
  - Won't prevent transmission, but will prevent evolution of MDR

# Containment strategies when *C. auris* is found

- Rapid IPC notification and outbreak declaration
  - Even with ONE case
- Prevalence screen
- All IPC measures deployed to minimize transmission
- Prospective surveillance
- Communication at time of transfer

# *C. auris* Take home points

- Mysterious emergence across the globe 2016
- Prevalence in Canada is very low
- Colonization is prolonged, perhaps indefinite
- Environmentally hardy
- Easily transmissible
- Poses highest risk to the sickest of patients

# THANK YOU!

- Questions?