

# The Year in Infection Control

## **Emerging pathogens**


Annelies Aerssens, UZ Gent

# Candida auris on the rise

Infect Dis Ther (2022) 11:1149–1160  
<https://doi.org/10.1007/s40121-022-00625-9>

## ORIGINAL RESEARCH

### *Candida auris* Candidemia in Critically Ill, Colonized Patients: Cumulative Incidence and Risk Factors

Federica Briano · Laura Magnasco · Chiara Sepulcri · Silvia Dettori ·  
Chiara Dentone · Malgorzata Mikulska · Lorenzo Ball · Antonio Vena ·  
Chiara Robba · Nicolò Patroniti · Iole Brunetti · Angelo Gratarola · Raffaele D'Angelo ·  
Vincenzo Di Pilato · Erika Coppo · Anna Marchese · Paolo Pelosi · Daniele Roberto Giacobbe  ·  
Matteo Bassetti

 Check for updates

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SPECIALTY SECTION  
This article was submitted to

## Surveillance diagnostic algorithm using real-time PCR assay and strain typing method development to assist with the control of *C. auris* amid COVID-19 pandemic

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Editorial

[www.microbialcell.com](http://www.microbialcell.com)

### The rise of *Candida auris*: from unique traits to co-infection potential

Nadine B. Egger<sup>1,§</sup>, Katharina Kainz<sup>1,§</sup>, Adina Schulze<sup>1</sup>, Maria A. Bauer<sup>1</sup>, Frank Madeo<sup>1-3,\*</sup> and Didac Carmona-Gutierrez<sup>1,\*</sup>

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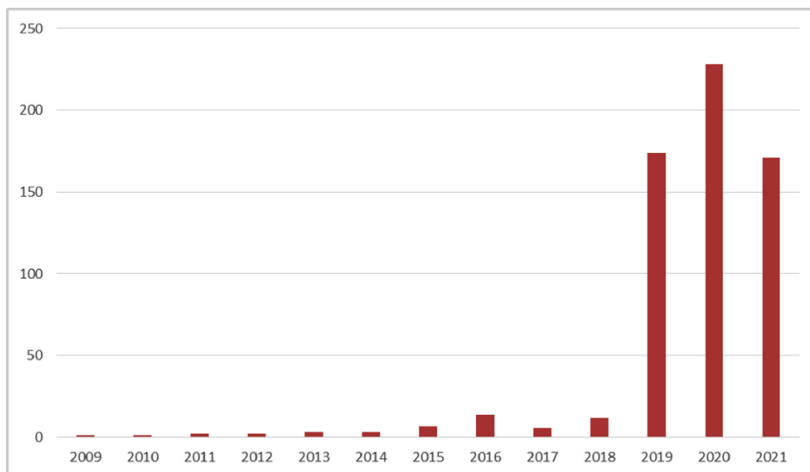


Fig. 1. Number of publications per year retrieved about “*Candida auris*” in the PubMed database as of August 10th 2021 (including original articles and reviews).

Bron: G. Desoubeaux, A.T. Coste, C. Imbert et al. *Journal of Medical Mycology* 32 (2022) 101248

# *Candida auris*: epidemiologie Europa

ECDC, 3<sup>e</sup> survey, april 2022

## RAPID COMMUNICATION

# Increasing number of cases and outbreaks caused by *Candida auris* in the EU/EEA, 2020 to 2021

Anke Kohlenberg<sup>1</sup>, Dominique L Monnet<sup>1</sup>, Diamantis Plachouras<sup>1</sup>, *Candida auris* survey collaborative group<sup>2</sup>

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2. The members of the *Candida auris* survey collaborative group are listed under Collaborators and at the end of the article

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**Collaborators:** The collaborators are listed at the end of the article.

**Citation style for this article:**

Kohlenberg Anke, Monnet Dominique L, Plachouras Diamantis, *Candida auris* survey collaborative group. Increasing number of cases and outbreaks caused by *Candida auris* in the EU/EEA, 2020 to 2021. Euro Surveill. 2022;27(46):pii=2200846. <https://doi.org/10.2807/1560-7917.ES.2022.27.46.2200846>

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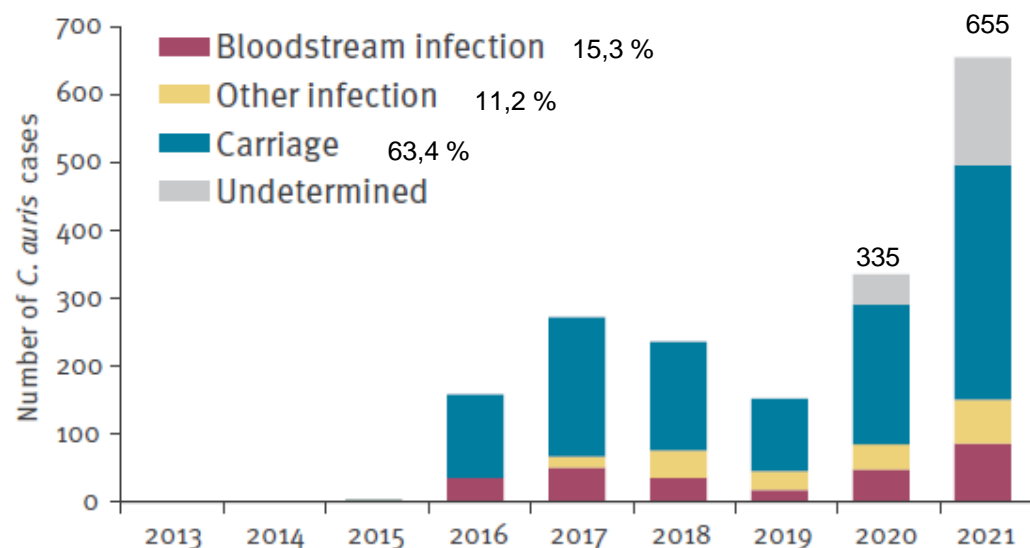
Article submitted on 28 Oct 2022 / accepted on 14 Nov 2022 / published on 17 Nov 2022

- Epidemiologische situatie, labocapaciteit, preparedness
- 30 landen EU/EEA
- Periode 2019-2021

# Candida auris: epidemiologie Europa

**FIGURE 1**

Reported cases of *Candida auris* infection or carriage, EU/EEA, 2013–2021 (n = 1,812)<sup>a</sup>

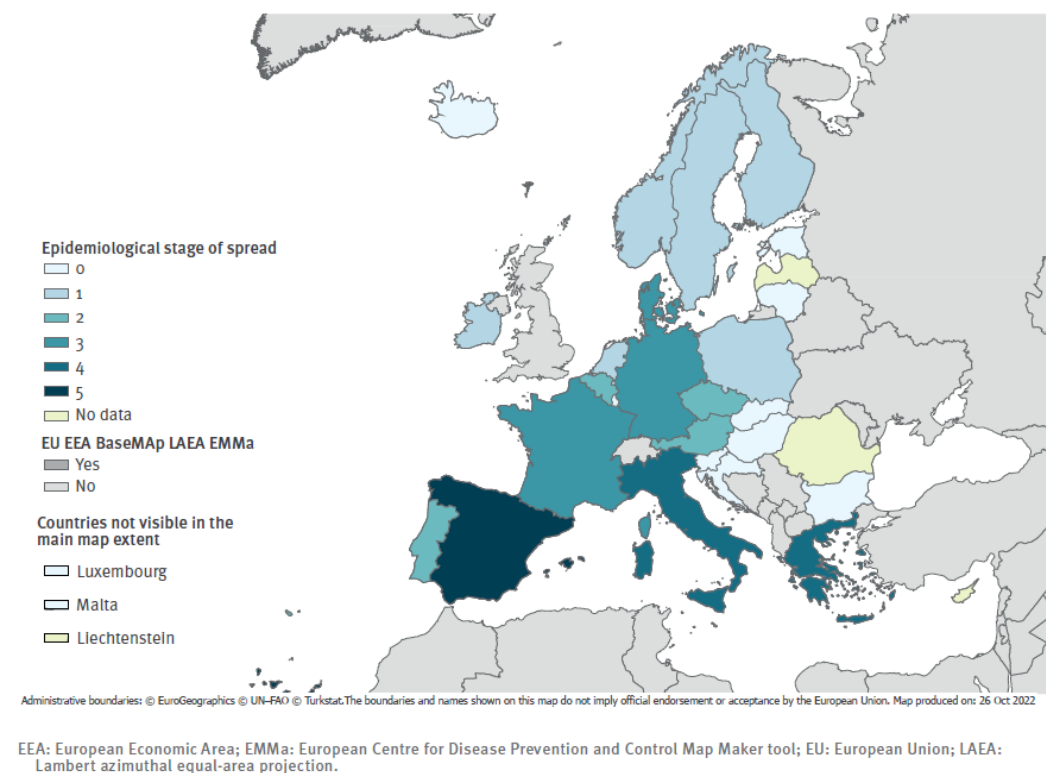


EEA: European Economic Area; EU: European Union.

2021: 13 landen  
 2019-2021: 14 uitbraken in 5 landen (Denemarken, Frankrijk, Duitsland, Griekenland en Italië) – N ptn 2 – 214

**FIGURE 2**

Epidemiological stage of *Candida auris* spread<sup>a</sup>, assessment by survey respondents in EU/EEA countries, 2022 (n = 30 countries)



- 0 0 = geen gevallen
- 1 1 = enkel geïmporteerde gevallen
- 2 2 = enkel sporadische gevallen
- 3 3 = sporadische uitbraken
- 4 4 = multiple uitbraken
- 5 5 = endemische situatie

# Conclusies survey

- ▶ Emerging schimmelpathogeen, OZ van uitbraken van invasieve HCA infecties
- ▶ Transmissie meestal via direct of indirect contact (oppervlakken en medische instrumenten) met besmette patiënt
- ▶ MDR, pan-DR, weinig behandelmogelijkheden
- ▶ In Europa eerste uitbraken in Spanje en UK
- ▶ Bewijs van verspreiding tussen zorginstellingen
- ▶ Endemische situatie in tenminste 1 land
- ▶ Nood aan meer en betere surveillance en follow-up

# *Candida auris*: Infection Prevention and Control

Received: 22 March 2022 | Revised: 7 April 2022 | Accepted: 9 April 2022

DOI: 10.1111/myc.13443

ORIGINAL ARTICLE

 **WILEY**

## Successful control of *Candida auris* transmission in a German COVID-19 intensive care unit

Carl Hinrichs<sup>1</sup>  | Miriam Wiese-Posselt<sup>2</sup>  | Barbara Graf<sup>3</sup> | Christine Geffers<sup>2</sup>  |  
Beate Weikert<sup>2</sup> | Philipp Enghard<sup>1</sup>  | Alexander Aldejohann<sup>4,5</sup>  | Annette Schrauder<sup>3</sup> |  
Andreas Knaust<sup>3</sup> | Kai-Uwe Eckardt<sup>1</sup>  | Petra Gastmeier<sup>2</sup>  | Oliver Kurzai<sup>4,5</sup> 



# Opdrijven van de ICP maatregelen

- ▶ Multidisciplinair uitbraak team
- ▶ Onmiddellijke opnamestop
- ▶ Cohortering van beide patiënten in apart deel van de afdeling
- ▶ Alle medische apparatuur apart (RX, echotoestel, dialyse, EKG toestel,...)
- ▶ 1 toegewezen verpleegkundige
- ▶ Opdrijven van R&D van alle kamers op de afdeling
- ▶ Wegwerp laryngoscoop bladen i.p.v. reusable
- ▶ Uitgebreide screening van patiënten (op afdeling en retrospectief) en omgeving (kamers, zorgmateriaal, 119 stalen)



# Transmissie

## ▶ Via direct contact?

### ▶ Contra:

- 1:1 verzorging van index case
- Hoge compliance van PBM i.k.v. COVID-19

## ▶ Vermoeden van indirect contact via reusable laryngoscoopblad (videoalaryngoscoop geleide intubatie): bij beide patiënten gebruikt met 1 week tussen en niet gebruikt voor andere patiënten

 handmatige R&D, moeilijk instrument

Ondanks strikte isolatiemaatregelen toch overdracht

Machinale reiniging heeft voorkeur boven manuele reiniging van zorgmateriaal en instrumenten

Routine screening invoeren?

# Candida auris: Meer weten?

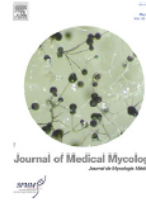
Journal of Medical Mycology 32 (2022) 101248



Contents lists available at ScienceDirect

Journal of Medical Mycology

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- Wereldwijde verspreiding
- Pathogeniciteit
- Diagnose en behandeling
- Preventie van verspreiding

General review

Overview about *Candida auris*: What's up 12 years after its first description?

Guillaume Desoubeaux<sup>a,\*</sup>, Alix T. Coste<sup>b</sup>, Christine Imbert<sup>c</sup>, Christophe Hennequin<sup>d,\*</sup>

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Received: 20 December 2021 | Revised: 7 April 2022 | Accepted: 12 April 2022

DOI: 10.1111/myc.13445

REVIEW ARTICLE

mycoses WILEY

3 delen:

- Labo
- Management besmette patiënt
- Management nosocomiale overdracht

Expert recommendations for prevention and management of *Candida auris* transmission

Alexander Maximilian Aldejohann<sup>1</sup> | Miriam Wiese-Posselt<sup>2</sup> | Petra Gastmeier<sup>2</sup> | Oliver Kurzai<sup>1,3</sup>

# Never heard of....

Infectious Diseases Now 52 (2022) 299–303



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Short communication

## Elizabethkingia anophelis outbreak in France

B. Guerpillon<sup>a,\*</sup>, M.S. Fangous<sup>b</sup>, E. Le Breton<sup>b,c</sup>, M. Artus<sup>b</sup>, F. le Gall<sup>b</sup>, L. Khatchatourian<sup>a</sup>, J.P. Talarmin<sup>a</sup>, P. Plesiat<sup>d,e</sup>, K. Jeannot<sup>d,e</sup>, N. Saidani<sup>a</sup>, G. Rolland-Jacob<sup>c</sup>

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# *Elizabethkingia anophelis*

- ▶ Gramnegatieve staaf
- ▶ Aangetroffen in aarde en water → omgevingskiem
- ▶ In labo niet routinematig te onderscheiden van andere soort (E. meningoseptica, E. miricola)
- ▶ Natuurlijke en verworven resistentie → moeilijke behandeling

# Uitbraak

- ▶ Setting: ZH in Bretagne (FR), 1348 bedden
- ▶ Epidemiologische curve:

- ▶ Sep 2020 – Sep 2021
- ▶ Piek febr-april 2021
- ▶ 12 CA, 8 HCA
- ▶ Bevestiging soort via WGS

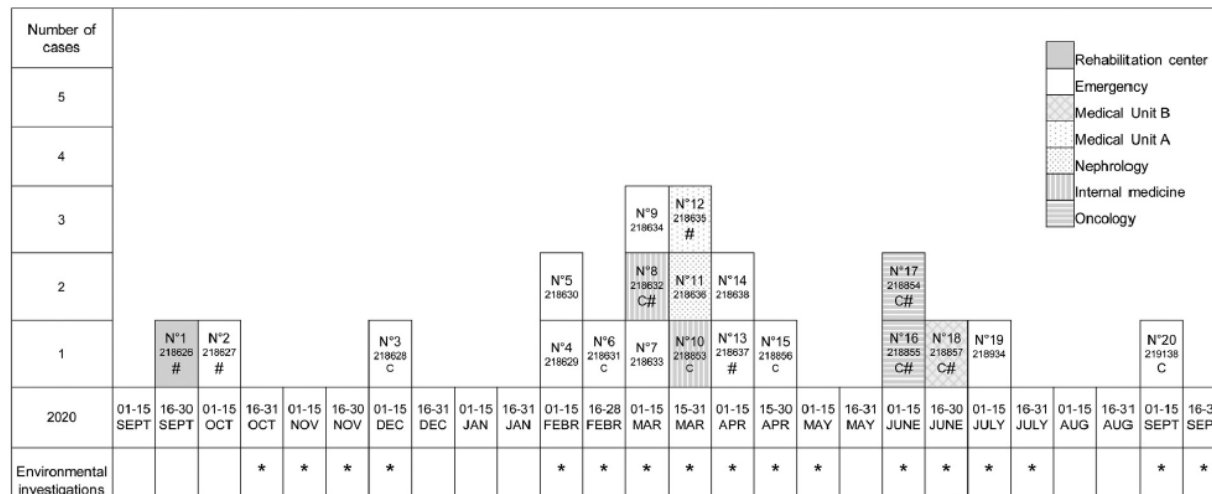


Fig. 1. Epidemic curve. # Healthcare-associated; \* Environmental investigations performed; C: Clonal strains.

# Uitbraak

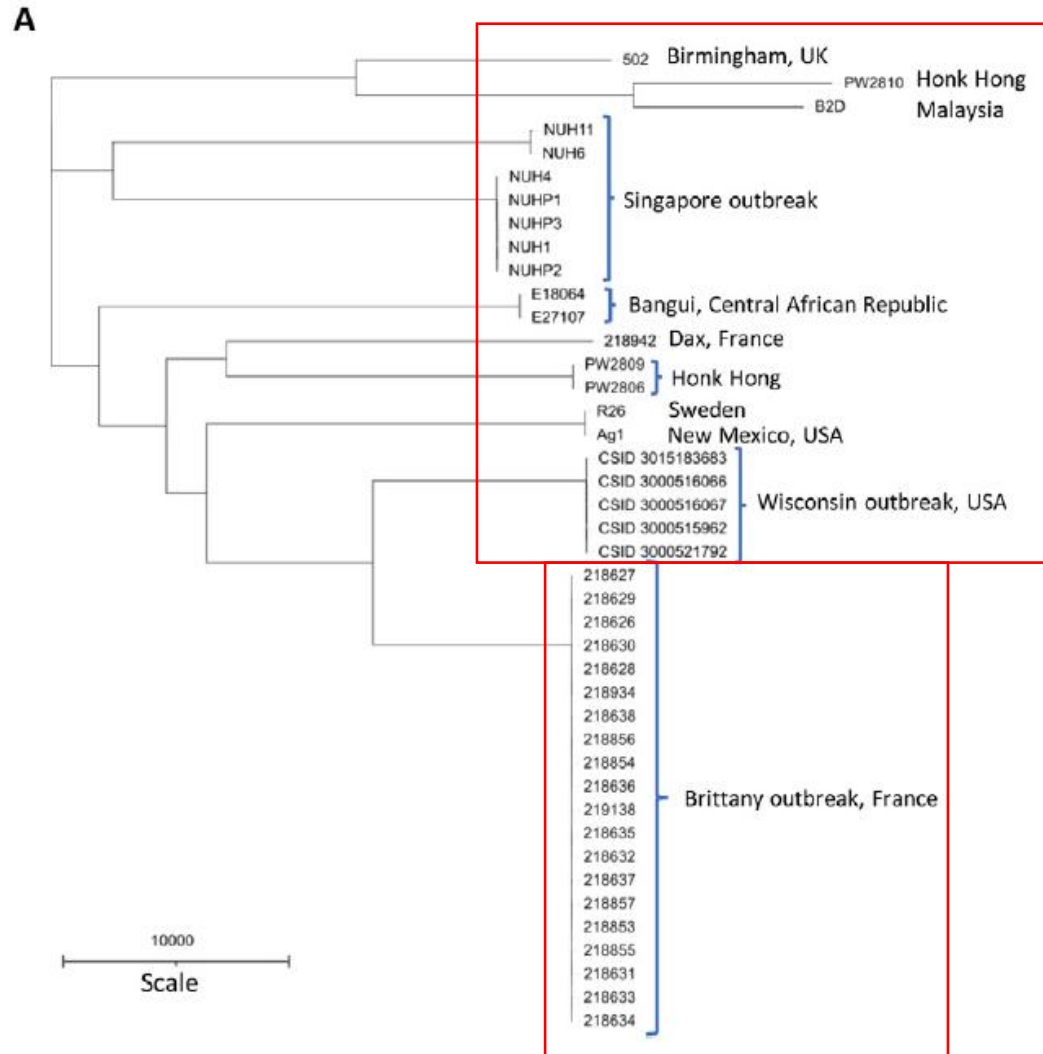
**Table 2**  
Demographic, biological, and clinical description of patients.

Patient	Sex	Age (year)	E. anophelis-positive samples	Onset origin	Charlson's score	Clinical presentation	Antibiotic therapy	Time between sampling and effective treatment (day)	Outcome (survival at 30 days or day of death)
1	F	84	Blood culture	Healthcare associated	5	Fever	SXT	7	Survival
2	M	72	Blood culture	Healthcare associated	10	Fever	SXT	0	Survival †
3	M	79	Blood culture	Community acquired	5	Fever, digestive presentation	SXT	6	Survival
4	F	89	Blood culture	Community acquired	4	Fever, sepsis	TZP+SXT	0	Death (D1)
5	F	69	Blood culture	Community acquired	4	Hypothermia, pneumonia, neurological failure	TZP -> SXT	0	Survival
6	M	79	Blood culture	Community acquired	7	Fever, pneumonia	FEP -> SXT	1	Survival †
7	F	74	Blood culture	Community acquired	8	Fever, pneumonia	FEP+SXT -> TZP+CIP	1	Death (D20)
8	M	87	Blood culture	Healthcare associated	6	Fever, pneumonia, neurologic failure, sepsis	0	NA	Death (D1)
9	F	86	Blood culture	Community acquired	8	Fever, skin, sepsis	TZP+SXT	0	Survival
10	M	77	Respiratory	Community acquired	3	No symptom	0	NA	Survival
11	M	86	blood culture, Urinary	Community acquired	11	Fever, urinary presentation	TZP+SXT	1	Survival
12	M	88	Blood culture	Healthcare associated	5	Fever, pneumonia	TZP -> SXT	0	Survival †
13	M	65	Blood culture	Healthcare associated	7	Fever, digestive	TZP -> CIP -> SXT	0	Survival
14	F	88	Blood culture	Community acquired	5	Fever, pneumonia, sepsis	FEP	0	Death (D1)
15	F	95	Blood culture	Community acquired	4	Fever, sepsis	0	NA	Death (D1)
16	M	50	Blood culture, respiratory, urinary	Healthcare associated	3	Fever, sepsis	SXT+CIP	1	Survival
17	M	73	Blood culture	Healthcare associated	5	Fever, digestive presentation	FEP	0	Survival
18	F	80	Blood culture	Healthcare associated	7	Fever, pneumonia, neurological failure	SXT+CIP	0	Survival
19	M	89	Blood culture	Community acquired	8	Fever, skin, digestive presentation, sepsis	0	NA	Death (D1)
20	M	88	Blood culture	Community acquired	6	Fever, skin, sepsis	FEP-> PIP/TAZ+CIP-> PIP/TAZ+SXT	1	Survival

Ea: Elizabethkingia anophelis; F: female; M: male; SXT: trimethoprim/sulfamethoxazole; CIP: ciprofloxacin; TZP: piperacillin-tazobactam; FEP: cefepime; ->: treatment adaptation; NA: not applicable; † Death between day 31 and 60.

- ▶ Gem 82 jaar (range 50-95)
- ▶ Gem Charlson Comorbidity Index 6 (range 3-11)
- ▶ Klinische presentatie voornamelijk koorts (n = 18) en pneumonie (n = 7)
- ▶ Positieve bloedculturen in 19/20 patiënten
- ▶ 9 doden (45% mortaliteit)
- ▶ Geen gemeenschappelijke blootstellingsfactor tussen de patiënten geïdentificeerd, wel alle CA gevallen afkomstig uit dezelfde stad

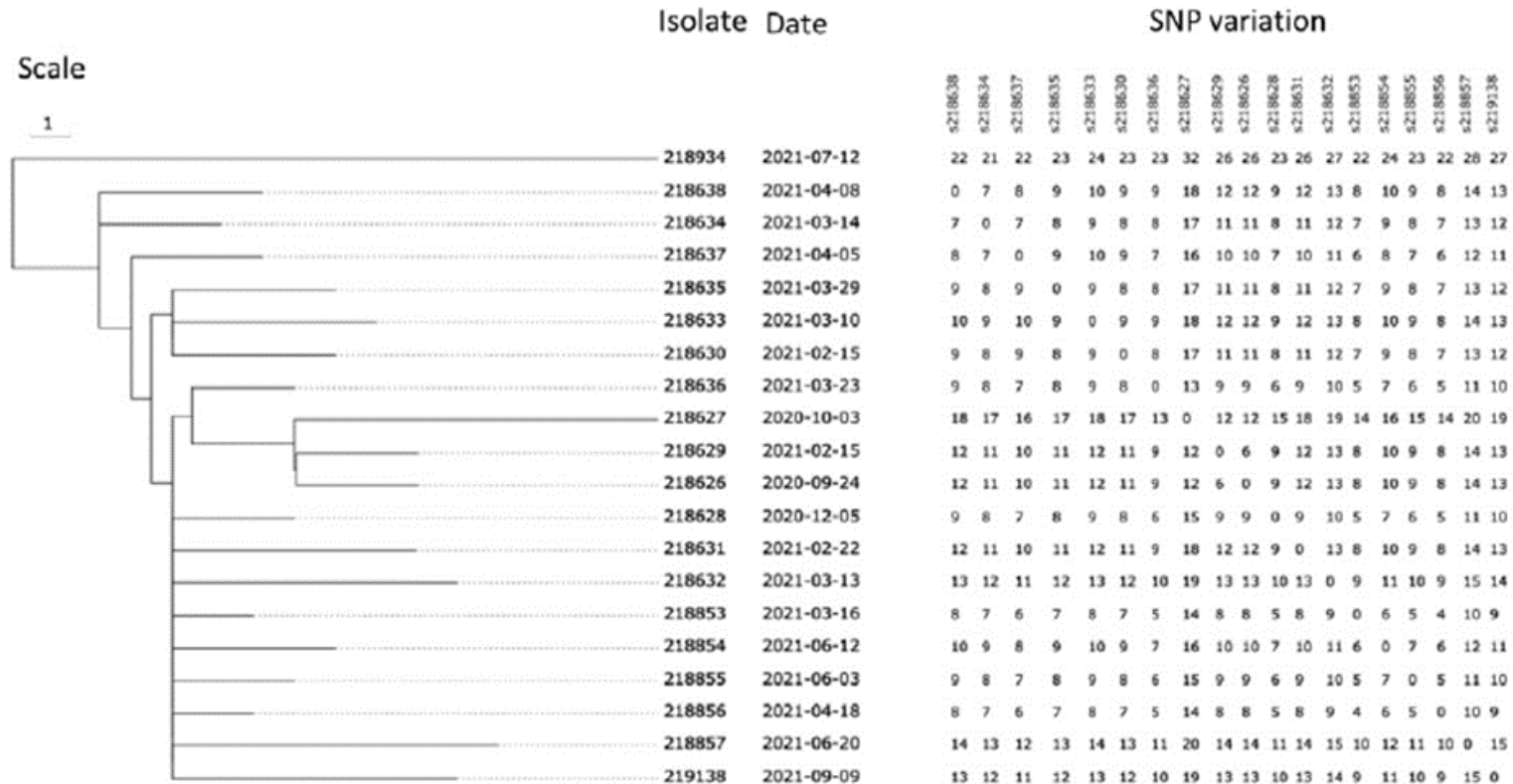
# Whole Genome Sequencing (SNP analyse)



22 isolaten uit publieke database

20 isolaten van uitbraak

# Whole Genome Sequencing



SNP variatie: 4-28



Epidemiologisch gelinkte stammen



# Conclusies

- ▶ Hoge mortaliteit (45%) door
  - ▶ Profiel patiënten
  - ▶ Resistentiepatroon *E. anophelis*
  - ▶ 5 binnen de 24 uur, 4 andere laattijdig door verslechtering comorbiditeiten
- ▶ Transmissieroute niet geïdentificeerd
  - ▶ Besmetting via water meest waarschijnlijk (WGS: stammen closely related)

# Elizabethkingia anophelis: meer weten?

Diagnostic Microbiology and Infectious Disease 88 (2017) 201–205



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Contents lists available at ScienceDirect

Diagnostic Microbiology and Infectious Disease

journal homepage: [www.elsevier.com/locate/diagmicrobio](http://www.elsevier.com/locate/diagmicrobio)



Review

Mini review: New pathogen profiles: *Elizabethkingia anophelis*

J. Michael Janda <sup>a,\*</sup>, Denise L. Lopez <sup>b</sup>

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<sup>b</sup> Tulare County Public Health Laboratory, Tulare County Health & Human Services Agency, Public Health Branch, Tulare, CA, 93274



microorganisms



Review

## *Elizabethkingia* Infections in Humans: From Genomics to Clinics

Jiun-Nong Lin <sup>1,2,3,\*</sup>, Chung-Hsu Lai <sup>1,2</sup>, Chih-Hui Yang <sup>4</sup> and Yi-Han Huang <sup>1</sup>

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<sup>2</sup> Division of Infectious Diseases, Department of Internal Medicine, E-Da Hospital, I-Shou University, Kaohsiung 824, Taiwan

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Received: 7 August 2019; Accepted: 27 August 2019; Published: 28 August 2019



# WGS in UZ Gent - IP

- ▶ Grootschalig voor SARS-CoV-2
- ▶ Retrospectief: Presentatie H. Hamerlinck
- ▶ Real-time:
  - *Enterobacter cloacae* op NICU
  - 2 epidemiologisch gelinkte gevallen van MRSA, VRE, CPE,...

# The Year in Infection Control

## **Emerging pathogens**

Annelies Aerssens, UZ Gent

## **A (very) long year in infection control**

Thomas Snoeij, UZ Gent

## **Nieuwe inzichten in bronisolatie na COVID-19**

Isabel Leroux-Roels, UZ Gent