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The response to the emergence of *Candida auris* within England

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On behalf of the National *Candida auris* Incident Management Team

Presented by: Rebecca Guy, National Infection Service, Public Health England

Conflicts of Interest: None

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Contents

- Background
- Emergence of *C. auris* in England
- Current Situation
- Investigations
  - Organism specific
  - Environmental
  - Epidemiology
- Future Work

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Background

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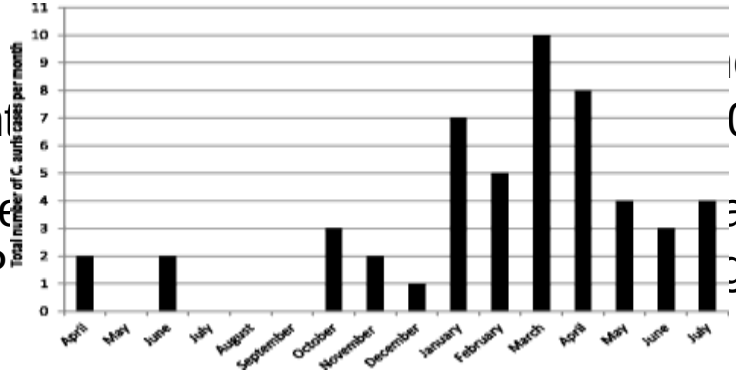
Emergence in England

- Sporadic cases identified in 2013 and 2014 – thought to be introductions from overseas
- In 2015, 15 isolates, of which 9 from deep/sterile sites
- One tertiary referral site noted multiple detections in 2015
- Despite enhanced [illegible]easure the outbreak was difficult to cont[illegible]016
- In June 2016 a brie[illegible]als and laboratories, and in July 2016 P[illegible]g the public



Schelenz *et al.* Antimicrobial Resistance and Infection Control (2016)

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Emergence in England

- By March 2017, over 180 detections from 20 different Trusts (hospitals under the same management)
- Mostly colonisations, detected through enhanced surveillance
- 49 clinical infections with **24 candidaemias**
- **Large outbreaks in at least 3 hospital Trusts**
- Sequencing suggests 3 lineages (Indian, South African, Japan/Korea) - **multiple introductions to UK**
- Sequencing of isolates of hospital outbreaks suggests different clades - **multiple introductions to hospital**

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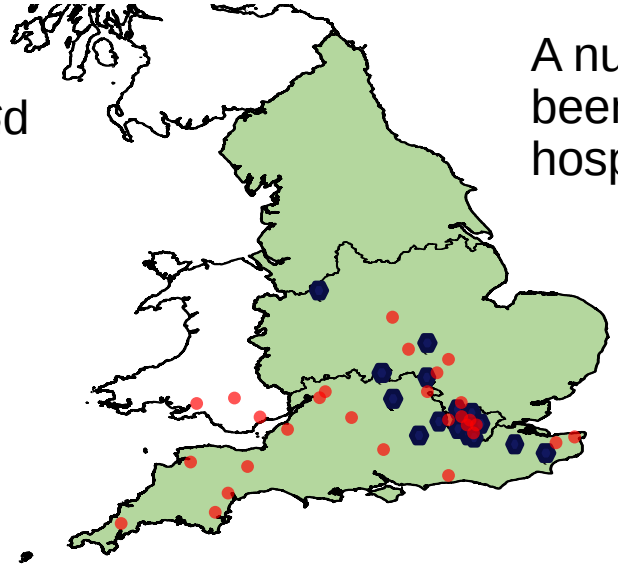
Emergence in England

Locations of UK inter-hospital patient detections with *C. auris* detections



A number of patients have been transferred to a hospital abroad

Further work to link *C. auris* patient records to the national hospital inpatient episode database is being undertaken

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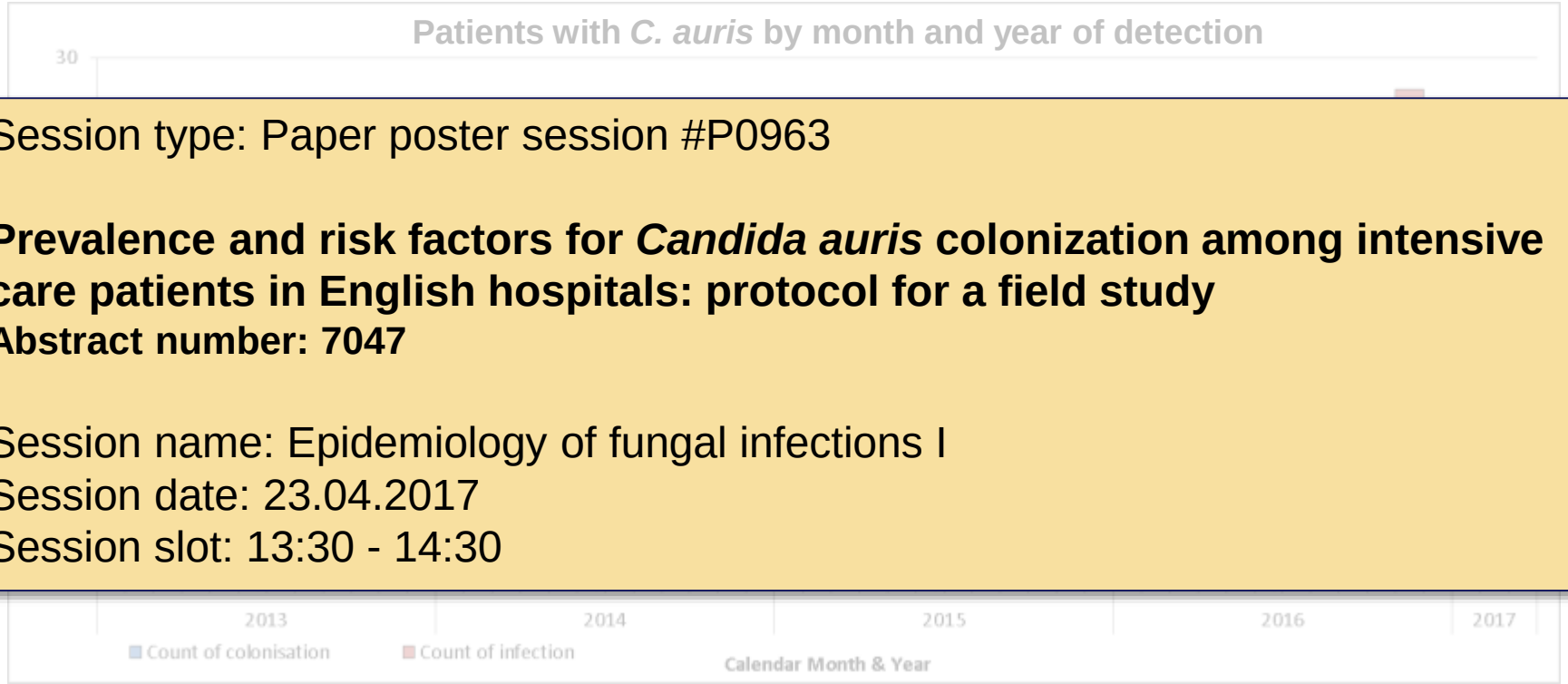
Current Situation



Session type: Paper poster session #P0963

Prevalence and risk factors for *Candida auris* colonization among intensive care patients in English hospitals: protocol for a field study
Abstract number: 7047

Session name: Epidemiology of fungal infections I
Session date: 23.04.2017
Session slot: 13:30 - 14:30

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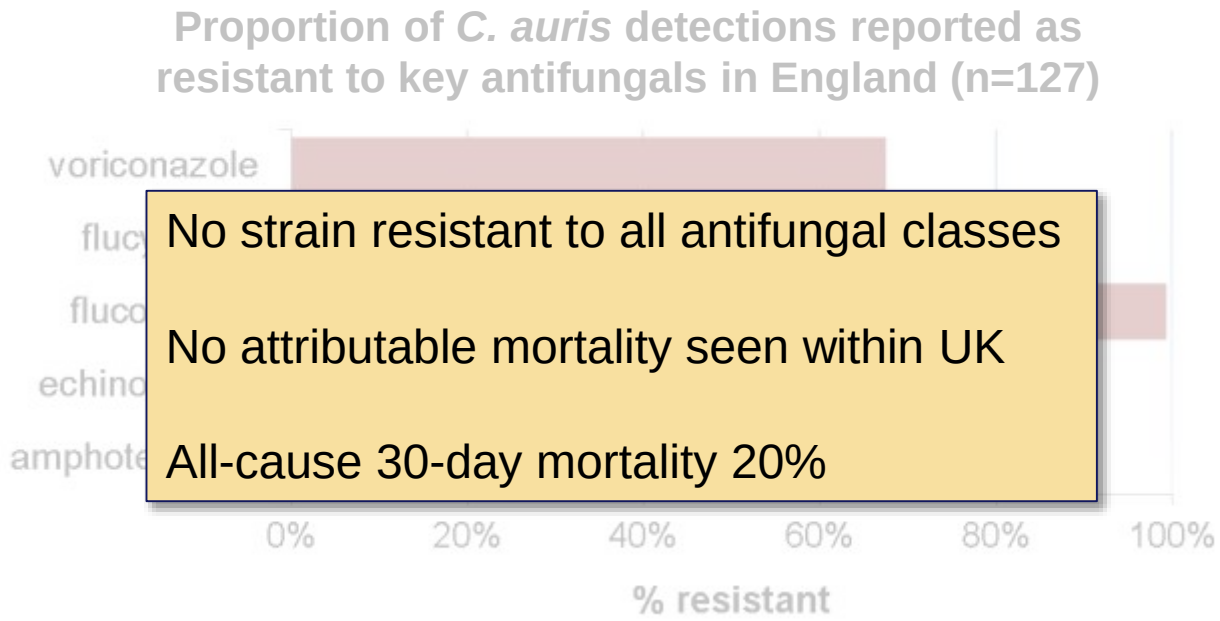
Current Situation



No strain resistant to all antifungal classes

No attributable mortality seen within UK

All-cause 30-day mortality 20%

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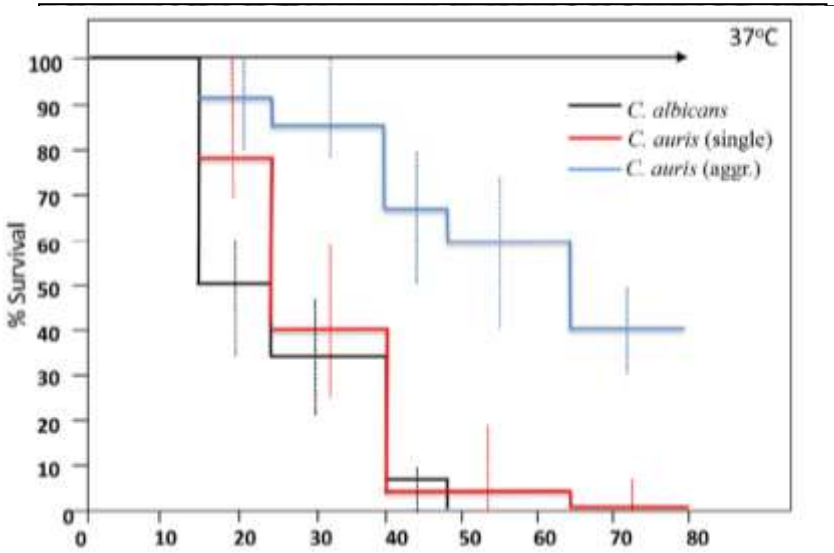
Mycology Reference Laboratory



Comparative Pathogenicity of United Kingdom Isolates of the Emerging Pathogen *Candida auris* and Other Key Pathogenic *Candida* Species

Borman, Szekely, Johnson. *mSphere* (2016)

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		MIC (mg/L)													
		0.015	0.03	0.06	0.125	0.25	0.5	1	2	4	8	16	32	64	>64
Amphotericin B	(single)	-	-	-	-	1	2	36	9		-	-	-	-	-
	(aggr.)	-	-	-	-	1	-	10	2	1	-	-	-	-	-
Fluconazole	(single)	-	-	-	-	-	-	-	-	-	4	22	9	6	8
	(aggr.)	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Itraconazole	(single)	-	19	5	1	1	1	-	-	-	-	1	-	-	-
	(aggr.)	-				7	4	1	-	-	-	-	-	-	-
Voriconazole	(single)	-	-	7	17	10	9	1	1	1	-	2	-	-	-
	(aggr.)	-	-	-	-	-	-	3	6	5	1	-	-	-	-
Posaconazole	(single)	-	20	7	1	1	-	-	1	-	-	1	-	-	-
	(aggr.)	-		9	2	1	-	-	-	-	-	-	-	-	-
Caspofungin	(all)	-	-	1	6	1	1	-	1	-	-	-	1	-	-
Anidulafungin	(single)	2	2	14	14	6	3	1	2	2	-	-	-	-	-
	(aggr.)	-	1	2	3	3	2	1	1	-	-	-	-	-	-
Flucytosine	(single)	-	-	-	26	2	-	1	-	3	2	1	2	1	5
	(aggr.)	-	-	-	8	3	1	1	-	-	-	-	-	-	-

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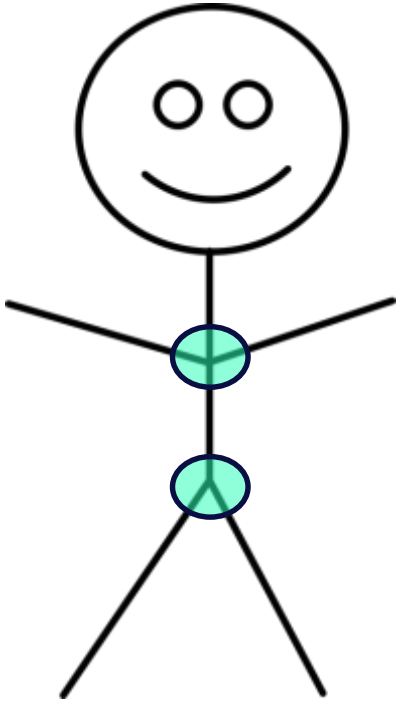
Field Epidemiology

Table 1: Site of *C. auris* detection, London, Apr 2015-Jun 2016 (N=42)

Specimen Group	Specimens n	Specimens %	Patients n	Patients %
Skin/MRSA screen	145	26	33	79
Line Site	104	19	25	60
Unknown/Other	47	9	15	36
Respiratory	77	14	14	33
Surgical/Wound	79	14	14	33
Deep/Invasive	38	7	13	31
Urine	53	10	12	29
Stool/Rectal/Perineal	6	1	4	10
Total	**549**	**100**	**42**	**100**



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Field Epidemiology

Table 2: Classes of drugs administered prior to *C. auris* detection, London, Apr 2015-Jun 2016 (N=40)

Class of Drugs	n	%
Beta-lactam antibiotics	39	97.5
Other antibacterials	37	92.5
Tetracyclines	2	5

All eight candidemia cases were exposed to antifungals prior to *C. auris* detection

Overall, cases were exposed to a median of seven different drugs prior to *C. auris* detection

Severity	Confirmed Infection N=8	Possible Infection N=11	Colonization N=21
Antifungals	100%	55%	52%
Fluconazole	75%	9%	38%

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Transmission & Decontamination

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Biosafety Investigation Unit

Quantitative suspension test for the evaluation of fungicidal activity in the medical area

Results Reduction (log_{10}) in *C. auris* viability after exposure to chemical disinfectants and antiseptics

***C. auris* clade**	**surface disinfectant**	**antiseptic skin cleanser**	**skin disinfectant**	**antimicrobial hand and body wash**
	1000 ppm chlorine (5 minutes)	**10% povidone-iodine** (2 minutes)	**2% chlorhexidine gluconate in 70% IPA** (2 minutes)	**2% chlorhexidine gluconate*** (2 minutes)
S. African	**> 5.03**	**> 5.03**	**> 5.06**	**2.03**
S. Asian	**> 4.88**	**> 4.88**	**> 5.18**	**1.15**
E. Asian	**> 4.98**	**> 5.08**	**> 5.36**	**3.66#**
S. Asian (MDR)	**> 4.69**	**> 4.56**	**> 5.21**	**2.45**

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Unanswered questions

- Sites of carriage, **long-term carriage**
- Impact on case fatality rate
- **Background prevalence** in UK/Europe/World, emergence in multiple regions, animal host (?marine animal or bird, high temperature/salt)
- Route of transmission – Environmental contamination? Transient carriage on HCW hand? Shared equipment? Aerosolisation of skin flakes? Staff?
- Most likely multifactorial transmission dynamics
- What are **risk factors** for carriage? For acquisition on ICU settings?
- Are disinfectant or decontamination procedures adequate?
- Will it become endemic? Travel-related? Overseas hospital exposure?
- **When you look for it, do you find it?**

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Acknowledgements

National Incident Director: Colin Brown

The National Incident Management Team:

Health Protection Colleagues: Yimmy Chow, Fiona Neely, Janice Lo, Alyson Smith, Clare Humphreys, Karthik Paranthamam, Deborah Turbitt, Louise Bishop, Rachel Heathcock

National Infection Service: Emma Budd, Andre Charlett, Sarah Gerver, Berit Muller-Pebody, Ashley Sharp, Rohini Manuel, Bharat Patel, Anna JefferySmith, Andrew Borman, Elizabeth Johnson, Daniele Curtis, Nandini Shetty, Richard Puleston, John Paul, Clare Semke, Ginny Moore, Jimmy Walker, James Sedgwick, Nalini Iyanger, Albert Misfud, Peter Hoffman, Jayshree Dave, Eliza Alexander, Jake Dunning, Rachel Murphy

NHS Trust: Martina Cummins, Anne Hall, Katie Jeffery, Silke Schelenz, Surabhi Taori, Katy Marden, Stephanie Paget, Angela Legate, Poonam Kapila, Mala Sahathevan, Mary Twagira, Lisa Butcher

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Please don't forget to take a look at the other *Candida auris* National Incident Team and hospital presentations at ECCMID

We will be able to speak to you more about the detail of the work that we are undertaking

Candida auris outbreak in a tertiary care Hospital in England: Lessons learnt in infection control

Abstract number: 7649

Prevalence and risk factors for *Candida auris* colonization among intensive care patients in English hospitals: protocol for a field study

Abstract number: 7047

Thank You!