RAG Risk Assessment Group

RISK ASSESSMENT

Candida auris

Date of the signal	Date of the meeting	Signal provider	Present	Method
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Date of update	**Closing date**			

RAG persons of contact:

RATIONALE FOR RA

Description of the signal under assessment

Nature of the signal (e.g.: microbiological, chemical, ….): Microbiological

October 2016: article on the first report of *Candida auris* in America, Venezuela mentioned in Belgian generic press.

Request from the Cabinet of the Minister of Health to evaluate the situation in Belgium and define if specific measures have to be taken.

Description of the signal: Candidemia among hospitalised patients

In Venezuela, first hospital outbreak with *Candida auris* candidemia that involved 18 critically ill patients, between March 2012 and July 2013 (Calvo et al. 369-74).

Reliability of the signal: Published in peer-reviewed journal

BACKGROUND INFORMATION

Description of the context

Description of the health condition or syndrome linked to the signal

Candida auris was identified as a new species in 2009 from the external ear canal of a Japanese patient (Satoh et al. 41-44) and in blood cultures in 2011 (Chowdhary, Voss, and Meis 209-12).

Candida auris is currently a rare agent of fungemia but emerging as a multidrug-resistance nosocomial agent of candidemia causing large outbreaks in several countries (ex.: India, South Korea, Pakistan, South Africa, Venezuela, …) and associated with high mortality rate due to therapeutic failure (Borman, Szekely, and Johnson).

The proportion of non albicans spp. Is increasing and is attributable to the use of prophylactic antifungal drugs, such as azoles among high-risk population (Chowdhary, Voss, and Meis 209-12).

Hospital outbreaks caused by Candida auris have occurred this year in the UK and Spain. These hospital outbreaks have been difficult to control despite enhanced control measures. Isolated C. auris cases have also been detected in Norway and Germany.

Clinical presentation – complications

Candida spp. is cause of a wide spectrum of human mycotic infections.

Candida spp. Colonization of patients has been reported to occur in up to 80% of the critically ill patients after one week in intensive care (Vincent et al. 2323-29).

Transmission

Infections can occur by endogenous colonisation or by exogenous contamination:

1. Candida is a frequent commensal of the gastro-intestinal tract and oropharynx
2. Candida is also acquired from the hospital environment, from invasive medical procedure like catheter or by lack of hygiene procedure compliance with a particular attention to the role of hand transmission.(Lasheras et al. 181-82), (Brillowska-Dabrowska et al. 135-42).

C. auris has also a potential for clonal transmission.

Case fatality ratio

High mortality rate due to clinical treatment failures.

Overall crude in-hospital mortality rate ranges from 30 to 60%.

Diagnosis

Despite recent advance in rapid diagnostic microbiological techniques, early diagnosis of invasive candidiasis remains problematic, confirmation coming sometimes late in the clinical course.

Candida auris is phylogenetically related to *C. haemulonii* what can a cause of misdiagnose (Lee et al. 3139-42).

Treatment

Candida auris is an emerging fungal multiresistant pathogens.

Prevention

Candida auris has a predilection for epidemic spread and is difficult to treat since it is resistant to the first line antifungal (Fluconazole) and exhibit variable susceptibility to other azoles, amphotericin B and echinocandins.

Risk factors

Patients hospitalised in intensive care units, and mainly in surgical UCI, who prone to several of these risk factors:

Risk for critically ill patients, diabetes mellitus, abdominal surgery, immunosuppression, >60 y old, ...

Patients exposed to broad spectrum antibiotics,

Patients exposed to invasive medical procedure and in particular central venus catheter.

Epidemiological situation (in Belgium and elsewhere)

Bloodstream infection (BSI) is among the most severe infections and is associated with increased morbidity, mortality and additional costs.

The risk of nosocomial bloodstream infections by Candida species is largely described in medical reviews. Bloodstream infection (BSI) occurs in up to 10% of the patients in intensive care units.

In the US, Candida spp. are the most causative organism of fungal infections and candidaemia accounts for about 8% of bloodstream infections (Kim, Jeon, and Kim 99-104).

In Canada, incidence of candidaemia is the third most common type of BSI in intensive care unit patients (Maganti, Yamamura, and Xu 530-38).

In 2011, *Reunes et al* described Candida as one of the predominant microorganisms for nosocomial bloodstream infections among elderly hospitalised patients with 5.8%. Risk factors associated with BSI are intravenous access and being bedridden. The duration of catheterisation plays a crucial role in developing an infection (risk increased by 8.7-fold if catheter in situ >7 days) (Reunes et al. e39-e44), (Chatterjee et al. 686).

An outbreak is currently ongoing in UK involving at least 50 patients between April 2015 and July 2016 (Schelenz et al. 35). Among these colonised patients 18% developed a candidaemia. Environmental sampling in the hospital showed persistent presence of the yeast around bed space areas despite implementation of strict infection and prevention control measures like isolation of

cases and their contacts, wearing of personal protective clothing by health care workers, screening of patients on affected wards, skin decontamination with chlorhexidine, environmental cleaning with chorine based reagents and hydrogen peroxide vapour. Carriage was negligible in admitted population (0.04%). In this outbreak, no death was directly attributable to infections with C. auris but the antifungal drugs resistance is a concern.

In Belgium:

Surveillance of bloodtream infections ……

The National Reference Centre, UZ Leuven, has confirmed the first case of BSI due to Candida auris in a hospital in Flanders in XXXX. This infection was related to a catheter.

RISK ASSESSMENT

Since first description in Asia in 2009, *C. auris* has increasingly been reported in tertiary care hospitals from different geographic areas and for the first time in UK, Spain in 2016.

One case has been confirmed by the National Reference Centre, UZ Leuven.

Candida auris remains a rare agent of severe infections but *Candida* non *albicans*, and *auris* in particular, are recognised like emerging fungal pathogen affecting critically ill patients, associated with a high crude mortality rate related to treatment failure due to multidrugs resistance.

C. auris can cause invasive infections and most C. auris isolates are resistant to fluconazole. Resistance to other antifungal agents has also been reported and multidrug-resistant C. auris isolates with resistance to all three main classes of antifungal drugs have been described. Unlike other Candida species, C. auris seems to have a high propensity for transmission in healthcare settings, possibly related to environmental contamination. Commercially available laboratory tests might fail to identify C. auris.

C. auris poses a risk for patients in healthcare facilities in Europe due to its propensity to cause outbreaks and its antifungal resistance. Difficulties with laboratory identification and lack of awareness of this new Candida species might result in transmission and outbreaks remaining unnoticed. There is a need to raise awareness in European health facilities to adapt testing strategies in laboratories and implement enhanced control measures early enough to prevent further hospital outbreaks.

SUMMARY OF THE RISK ASSESSMENT

1. - Unusual or unexpected?	Unusual	Outbreaks more and more described.
2.- Public health impact? Low/medium/high	Low	Rare in Belgium but possible increasing prevalence as the risk is associated with - rising number of immunocompromised persons, - more invasive medical procedures, - unwarranted use of multiple broad spectrum antibiotics. Of public health importance due to : - mortality rate, - possible fungal resistance, - Difficult environmental decontamination.
3 - Risk for dissemination? Low/medium/high	Low	Limited to severe ill patients undergoing invasive medical procedure.
4 - Limitation of international movement of persons/goods?	No	Healthcare associated infections

RECOMMENDATIONS FROM THE RAG

ACTIONS ALREADY TAKEN

NA

RECOMMENDATIONS FOR SURVEILLANCE AND COMMUNICATION

As early detection is essential, inform hospitals about the necessity to identify the spp. if a Candida non albicans is incriminated in a bloodstream infection in order to check the resistance of strains allowing the administration of the appropriate antifungal and to put in place immediate measures avoiding the environmental contamination and/or secondary cases.

Remind hospitals about the existence of the National Reference Centre which can help them in confirming the diagnosis if necessary.

Highlight the importance of hand hygiene in such context also.

Invite hospitals to contact the health inspectorate of the communities and the outbreak support team if they diagnose two cases having a potential link (time, place or persons).

RECOMMENDATIONS ABOUT CONTROL MEASURES

High council of Hygiene should check if already existing recommendations cover screening practices for fungal contamination in acute care units and specific measures for environmental decontamination in case of candida infections in acute care units:

Key elements to be included are:

- Search for spp. in clinically significant specimens in high risk hospital environment and high risk patients;
- General infection prevention and control measures for environment and fomites (e.g.: strict isolation, decolonisation, extensive screening, regular environmental and equipment cleaning);
- Hand hygiene compliance;
- Waste and linen disposal policy;
- Antifungal stewardship

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