

**EV0293**

**ePoster Viewing**

**Resistance surveillance & epidemiology: MRSA, VRE & other Gram-positives**

### **Emergence and dissemination of a linezolid-resistant *Staphylococcus capitis* clone in France**

Marine Butin<sup>1</sup>, Patrícia Martins Simões<sup>1</sup>, Céline Dupieux<sup>2</sup>, David Leyssene<sup>3</sup>, Stephanie Bordes-Couecou<sup>3</sup>, Bruno Pichon<sup>4</sup>, Hélène Meugnier<sup>1</sup>, Nadine Lemaitre<sup>5</sup>, Frédéric Schramm<sup>6</sup>, François Vandenesch<sup>7</sup>, Iris Spiliopoulou<sup>8</sup>, Oana Dumitrescu<sup>9</sup>, Frederic Laurent<sup>†\*10</sup>

<sup>1</sup>*National Reference Center for Staphylococci, Hospices Civils de Lyon, Ciri Inserm U1111, Department of Bacteriology, Department of Bacteriology, Lyon, France*

<sup>2</sup>*National Reference Center for Staphylococci, Hospices Civils de Lyon, Ciri Inserm U1111, University of Lyon, Lyon, France*

<sup>3</sup>*Centre Hospitalier de la Côte Basque, Bayonne, France*

<sup>4</sup>*Public Health England, Staphylococcus Reference Service, Antimicrobial Resistance and Healthcare Associated Infections Reference Unit (Amrhai), London, United Kingdom*

<sup>5</sup>*Chru Lille, Department of Bacteriology, Lille, France*

<sup>6</sup>*Chru Strasbourg, Department of Bacteriology, Strasbourg, France*

<sup>7</sup>*Inserm, Hospices Civils de Lyon, Laboratoire de Bactériologie, Lyon, France*

<sup>8</sup>*University of Patras, School of Medicine, Department of Microbiology, Patras, Greece*

<sup>9</sup>*Hospices Civils de Lyon, Centre National de Référence des Staphylocoques, Ciri Inserm U1111, Lyon, France*

<sup>10</sup>*National Reference Center for Staphylococci, Hospices Civils de Lyon, Ciri Inserm U1111, Department of Bacteriology, Department of Bacteriology - Bat 0 - Cbn, Lyon, France*

**Background:** In this study we investigated clinical, microbiological and genetic characteristics of 9 linezolid (LZD) resistant *S. capitis* isolates from 3 distant French ICUs (Bayonne, Strasbourg, Lille).

**Material/methods:** All the LZD resistant *S. capitis* isolates available in the French National Reference Center for Staphylococci collection were included in this study. For each isolate, clinical data was retrospectively collected and antimicrobial susceptibility tests were performed using the standard agar diffusion method and Etest (for daptomycin, LZD, teicoplanin, vancomycin). Presence of the *cf* gene and mutations in the 23S rRNA loci were investigated by 23S-specific PCR. Genetic relationships between the 9 isolates were determined by PFGE and by whole genome sequencing (WGS) and comparison.

**Results:** Nine French LZD resistant *S. capitis* strains were included in this study. These strains had been isolated between June 2013 and December 2014 in 9 adult patients hospitalized in 3 distant ICUs (between 2 and 5 strains per center). Only 5 of the 9 patients had previously received LZD therapy. Isolates were all resistant to methicillin and aminoglycosides. Additional resistances to vancomycin, teicoplanin and daptomycin were observed in 1, 3 and 4 isolates, respectively. The *cfr* gene was absent in all isolates. A T2319C and G2576T mutations in the 23S rRNA were found in all isolates. All 9 isolates belong to a same clone, as defined by their shared PFGE profile. Their high genetic relationship was further confirmed by WGS, showing at most 11 SNPs (over 1,482,948 shared positions) between core genomes of the 9 isolates, versus a mean of 17,859 SNPs when compared with 7 publicly available *S. capitis* genomes.

**Conclusions:** Here, we describe a LZD resistant *S. capitis* clone present in at least 3 distant French ICUs pointing to an inter-ICU transmission. Moreover, the absence of linezolid prior therapy in 4 patients suggests a nosocomial transmission inside each ICU. The G2576T mutation, observed in all isolates, is classically found in coagulase negative staphylococci. However, the role of mutation T2319C, not previously described in the literature, in the LZD resistant phenotype of these isolates is undetermined. The emergence and inter-hospital diffusion of this LZD resistant clone in French ICUs is both worrisome and unexpected as *S. capitis* is usually known as a low-virulent species. Preliminary results in our lab highlight the presence of an isolate in Greece that belongs to the same clone as French isolates, on the basis of both PFGE and WGS analysis. Thus, we are currently collecting LZD resistant *S. capitis* isolates from other European countries. The dissemination pathways of this clone between distant French hospitals, and a possible unrecognized larger distribution of this clone clearly require further studies.