

**EV0420**

# Three month experience of Xpert® Carba-R v2 assay for the detection of carbapenemase-producing Enterobacteriaceae.

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## Background

The dissemination carbapenemase-producing Enterobacteriaceae (CPEs) is a great matter of clinical. Early detection of colonized patients is detrimental for fast implementation of strict hygiene and contact precautions of the patients. Detection of CPE is primarily based on chromogenic culture plates containing antibiotics, but for patients coming from abroad (countries with high prevalence of CPEs), fast molecular detection is used. The aim of the present study was to determine the biological performances of the Xpert Carba-R v2, in the daily workflow of a hygiene unit.

## Methods

Between September and November 2015, 139 patients (93 patients previously hospitalized abroad, and 46 contact patients of known carriers) have been screened for CPE by the Xpert Carba-R v2 (Cepheid) and by culture which was used as gold standard. The culture consisted of an enrichment culture containing an ertapenem disk for 24h and then plating on the ChromID® CARBA Smart medium (bioMérieux) for an additional 24h. For patients with previous hospitalization abroad, this enrichment culture was repeated twice.

## Results

The Xpert Carba-R v2 was able to detect eight OXA-48-like and one KPC carriers. 8 out these 9 could be confirmed by culture (Table).

In one case, despite repeated attempts the culture remained negative. This discrepancy could be the result of a higher sensitivity of the PCR as compared to the culture, or an OXA-244 that does not reproducibly grow on ChromID CARBA Smart medium, or the result of a contamination of the sample.

In one case, the test revealed two carbapenemase genes OXA-48 and VIM. However, the culture results revealed two bacteria: 1 *K. pneumoniae* OXA-48 and *E. cloacae* OXA-48 and NDM. We cannot rule out, that this patient may carry another enterobacterial isolate containing VIM, but susceptible to carbapenems, and thus may not grow on ChromID CARBA Smart medium.

Table: Screening results

Xpert Carba-R v2	Culture result	Origin of patients
OXA-48 +, VIM +	<i>K. pneumoniae</i> OXA-48; <i>E. cloacae</i> OXA-48, NDM	Serbia
OXA-48 +	<i>K. pneumoniae</i> OXA-181	Algeria
OXA-48 +	<i>E. coli</i> OXA-48	Contact patient of OXA-48 carrier
OXA-48 +	<i>E. coli</i> OXA-48	Tunisia
OXA-48 +	<i>E. coli</i> OXA-48	Algeria
OXA-48 +	<i>K. pneumoniae</i> OXA-48	Saoudi Arabia
KPC +	<i>E. coli</i> KPC-3	Portugal
OXA-48 +	<i>E. coli</i> OXA-48	Contact patient of OXA-48 carrier
OXA-48 +	negative	Contact patient of OXA-48 carrier

## Conclusion

The overall performances of the Xpert Carba-R v2 were good.

All the CPE carriers were detected in less than 1 hour versus 24/48h for the culture, allowing rapid isolation of the patients, in order to prevent further spread.

The Xpert Carba-R v2 kit is now able to detect OXA-181 variants. Our study demonstrated that the Xpert Carba-R v2 kit is well adapted for rapid screening of targeted risk patients, especially patients repatriated from countries known for high prevalence, or for rapid screening of contact patients of a known CPE-carrier.

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