

# IMPACT OF THE XPERT CARBA-R® ASSAY ON THE MANAGEMENT OF CARBAPENEMASE SCREENING: 1,5 YEARS OF FOLLOW-UP



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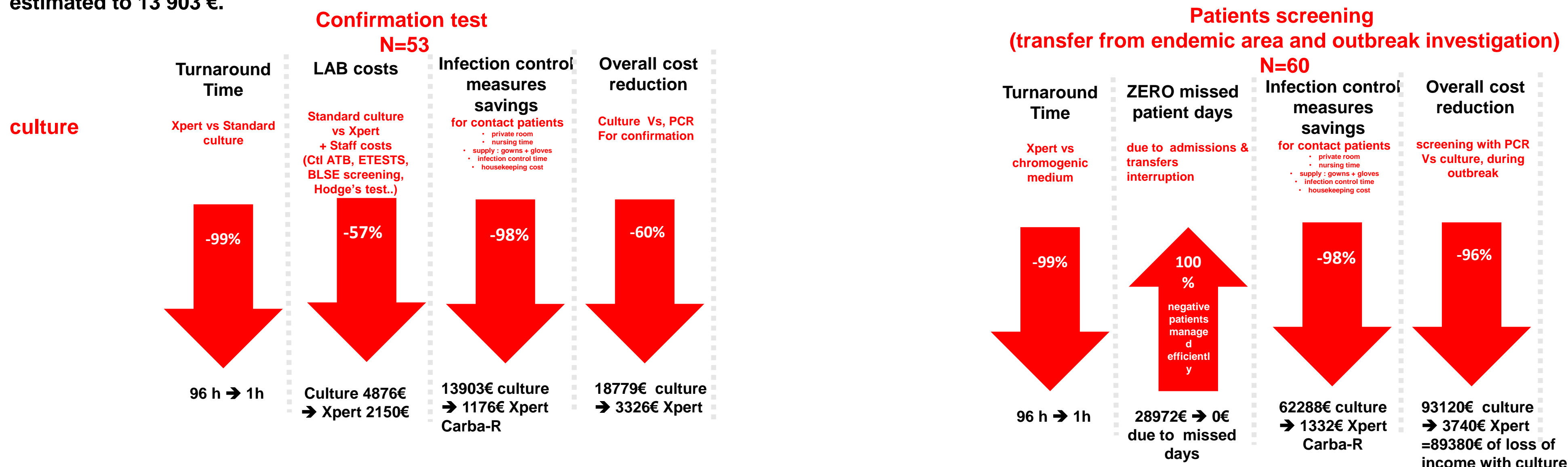
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**OBJECTIVES** In July 2014, one patient of our institution was diagnosed positive with carbapenemase OXA-48 thanks to Xpert Carba-R® (Cepheid). Excellent negative predictive value for contact patients was used and admissions were not stopped while the only positive patient was isolated during his stay. No secondary cases were observed. We thus compared the impact of the implementation of the Xpert Carba-R® on infection control management and cost effectiveness respect to standard culture based strategy. First results showed a neat medical value of the implementation of the assay so that we decided to use it in routine in two settings: patient screening (transfer from endemic area and outbreak investigation of contact patients) and confirmation test when antibiogram showed a decreased susceptibility to ertapenem or imipenem.

**METHODS** The variables studied were microbiology laboratory and clinical wards costs as well as costs associated with infection control intervention and bed turn over during a 1,5 year period.

**RESULTS** For patients screening, total laboratory costs including reagent and laboratory technician/pathologist time costs were higher for molecular technique than culture based method: 2 408 € vs 1860 €. However the very quick Xpert Carba-R® time to result (1 hour vs 4 days) had a dramatic impact on infection control measures and hospitalization costs. Indeed, the costs associated with infection control measures (including private room, nursing time, supplies (gowns and gloves), infection control staff time and housekeeping costs) were evaluated at 62 288 € with the culture-based strategy when it was only 1332 € with the molecular technique. Furthermore, with the Xpert® screening there were no potential missed beds due to the limitations of the admissions while it should have reached the amount of 28 972 € if the culture-based strategy had been retained. Finally, the total cost related to the culture-based strategy was 93120 € and only 3740 € with the molecular strategy, meaning a substantial cost savings of 89380€. Same results were obtained when Xpert® was used as a carbapenemase confirmation test: while molecular laboratory costs were 2 150 €, the infection control measures related to the use of phenotypic confirmation strategy were estimated to 13 903 €.



**CONCLUSION** While carbapenemase outbreaks are always a dramatic issue for institutions, to date, culture-based strategy is generally first line solution with strain confirmation by Reference center. However, it can be long and tedious implying a lot of resources consumption in the wards associated with infection control measures. Very rapid Xpert Carba-R® screening has several advantages (short TAT, 24/7 use, high NPV, detection of the most frequent carbapenemases) but is perceived as expensive at first sight leading to a limitation of use. In our study, we show Xpert Carba-R® is clearly associated with a neat improvement of cost-effectiveness not only for patient screening but also as a confirmation test.