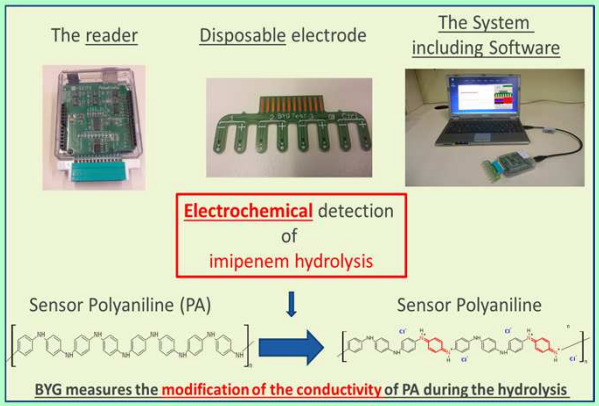
Multicentre evaluation of the BYG Carba test v2.0, a simplified electrochemical assay for the rapid laboratory detection of carbapenemase-producing *Enterobacteriaceae*

P Bogaerts[1*], S Oueslati[2], D Meunier[3], C Nonhoff[4], S Yunus[1], M Massart[1], O Denis[4], N Woodford[3], K L Hopkins[3], T Naas[2], L Dortet[2], T-D Huang[1], Y Glupczynski[1]

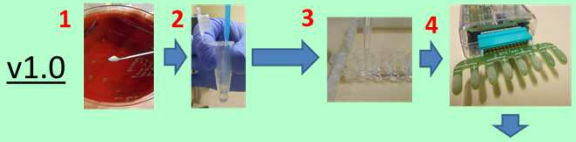
[1]Reference Laboratory for monitoring of antimicrobial resistance in Gram-negative bacteria CHU UCL Namur, Yvoir, Belgium
[2]Associated French National Reference Center for Antibiotic Resistance: Carbapenemase-producing Enterobacteriaceae, Le Kremlin-Bicêtre, France
[3]Antimicrobial Resistance and Healthcare Associated Infections (AMRHAI) Reference Unit, National Infection Service, Public Health England, London, NW9 5EQ, UK
[4]Department of Microbiology, Associated national reference center, Hôpital Erasme, Université Libre de Bruxelles, Route de Lennik 808, 1070 Brussels, Belgium

EP0375

BYG for carbapenemase detection: Electrochemical sensor

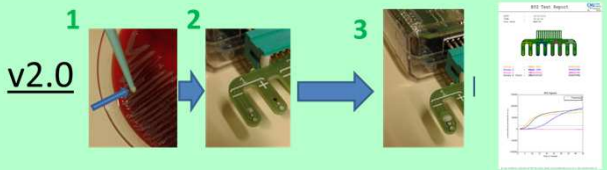


BYG v1.0 **detects CPE** from a concentrated bacterial suspension (10 µl loopful bacteria)



Multi pipetting, 5 min hands-on time,
Enrichment sometimes needed

BYG test v2.0 (BYG 2.0) relies on a **simplified and faster protocol**.



Single pipetting, 1 min hands on time,
no enrichment

P. Bogaerts et al. JCM 2016 54:349-358.

1. The validating centres

Three national reference centres:

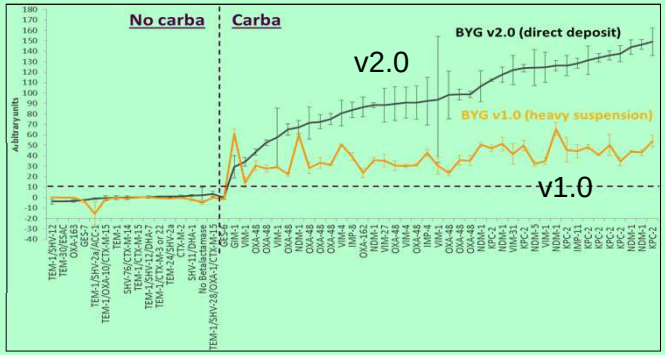
- **Belgium**
- **France**
- **UK**

2. The isolates

- **1181 clinical isolates**
- **511 retrospective collection isolates**
- **670 prospective consecutive isolates**

3. Comparison BYG v1.0 and BYG v2.0

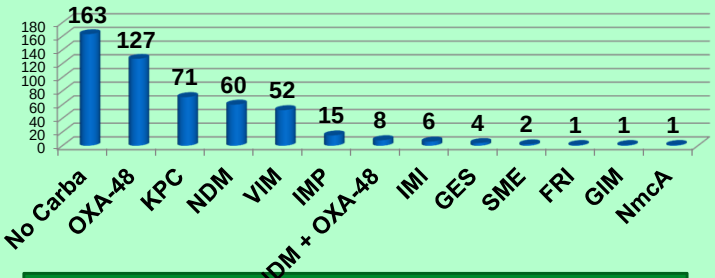
- **57 collection isolates**



v2.0: signal improved vs v1.0

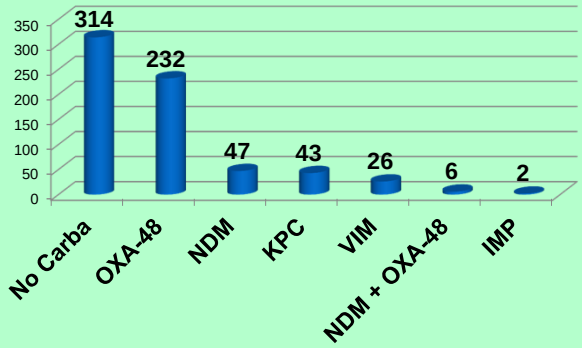
Results

511 collection isolates



Sensitivity 94,8 % and specificity 100 %

670 prospective clinical isolates



- **Sensitivity 97,7 % and specificity 99,7 %**
- **NPV: 97,5 (CI95 94,9 – 98,8); PPV: 99,7 (CI95 98,2 – 100)**

Total of 1181 isolates

- **85 % of the positive detected in max 10 min**
- **45 % in max 5 min**
- **2,3 % of discrepant results with reference methods**

Conclusions

1. Only few colonies are needed
2. High performance but GES-5 and OXA-244 not detected efficiently
3. Further validation for IMP-producing isolates needed
4. > 85 % of the carbapenemases including OXA-48 detected in less than 10 min.
5. Objective semi-quantitative and traced results