

Development of a UK NEQAS specimen for an External Quality Assessment Scheme for Pneumococcal Urinary Antigen Testing

Alison Couchman

UK NEQAS for Microbiology

November 2013

- *Streptococcus pneumoniae* is most common cause of community acquired pneumonia (CAP) cases.



- *British Thoracic Society 2009* recommendations
 - “Pneumococcal urine antigen tests should be performed for all patients with moderate or high severity CAP.”
 - “A rapid testing and reporting service for pneumococcal urine antigen should be available to all hospitals admitting patients with CAP.”

British Thoracic Society. guidelines for the management of community acquired pneumonia in adults: update 2009 Thorax 2009;64(Suppl III):iii1–iii55.

- Binax Now ® *Streptococcus pneumoniae* kit
 - Qualitative – presence /absence
 - Detects *S. pneumoniae* C-polysaccharide cell wall antigen present in all serotypes
 - Urine specimens - ease of availability
 - POCT
 - 15 mins = Rapid diagnosis concludes reduced use of broad spectrum antibiotic -> less resistance

Sordé *et al* Current and potential usefulness of pneumococcal urinary antigen detection in hospitalized patients with community acquired pneumonia to guide antimicrobial therapy. *Arch Intern Med* 2011; 171 (2): 166-172

Engel *et al* Positive urinary antigen tests for *Streptococcus pneumoniae* in community acquired pneumonia: a 7 year retrospective evaluation of healthcare cost and treatment consequences. *Eur J Clin Microbiol Infect Dis* (2013); 32(4) 485-92

- To investigate the stability of pneumococcal antigen positive urines
- To distribute pilot simulated samples for the detection of pneumococcal antigen in urinary specimens
- Collate and analyse results received from participating laboratories

➤ Materials

- *S. pneumoniae* antigen positive urines
- Urine negative for *S. pneumoniae* antigen
 - screened using dipstick for protein, glucose, pH, ketones, bilirubin, and nitrates
 - Microscopically screened for WBC, RBC, crystals, bacteria/yeasts, epithelial cells
 - Tested with the Binax Now ® kit in triplicate for a negative test result

➤ Method

- *S. pneumoniae* antigen positive urines tested using Binax Now ® *S. pneumoniae* kit
 - 20 urines were diluted 1:10 = all samples were positive
 - Strongest six urines were diluted 1:100 = all samples were positive

➤ Stability methodology

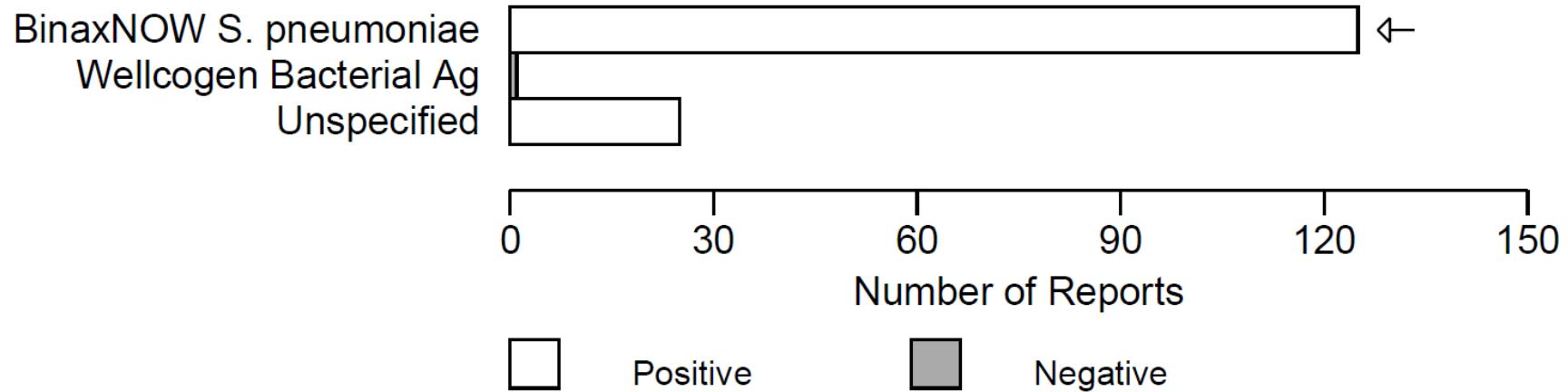
- The six *S. pneumoniae* antigen positive urines
 - Diluted 1:10 into antigen negative urine and stored at room temperature
 - Tested using Binax Now ® at 14 hours, 24 hours and 5 days
 - All samples retained positivity over the test period
- Diluted 1:100 into antigen negative urine and stored at room temperature
- Tested using Binax Now ® at 24 hours, 48 hours and 5 days
- All samples positive at 24 and 48 hours
- At 5 days, 4 out of 6 specimens were positive

May Distribution 3242 of Pilot EQA Scheme for UAT

205 participants – 96.6% correct answer

114 UK participants - 96.5% correct answer

Specimen : 1937 Pneumococcal antigen positive

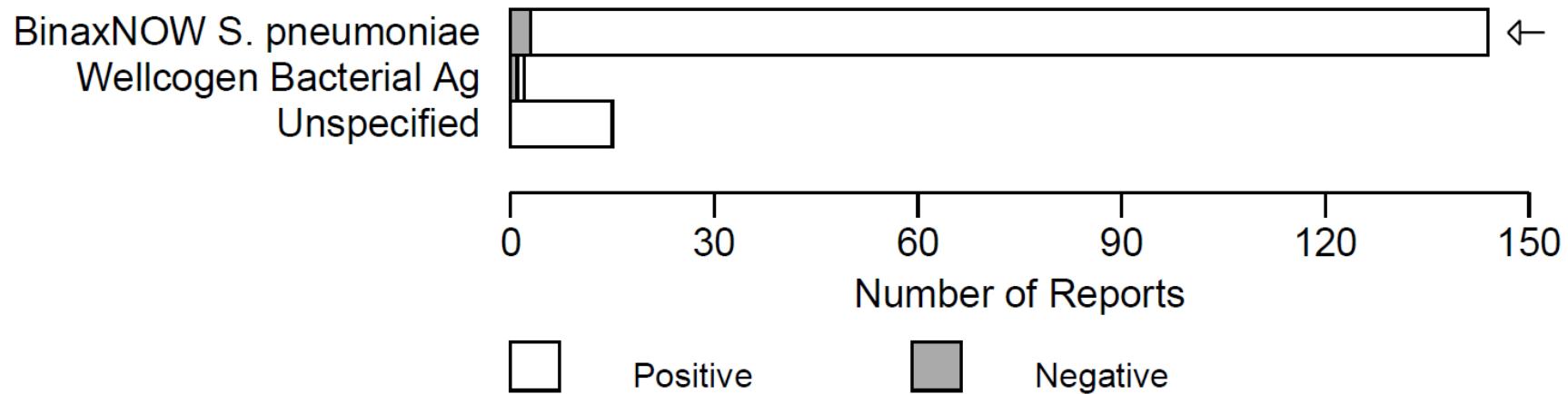


September Distribution 3312 of Pilot EQA Scheme for UAT

216 participants – 96.8% correct answer

114 UK participants – 98.3% correct answer

Specimen : 1938 Pneumococcal antigen positive



- Performance of pilot distributions was very good
- Final pilot specimen will be distributed in March 2014
- Aim to have prepared simulated urine specimens for pneumococcal antigen detection live for distributions 2014/2015.

ACKNOWLEDGEMENTS

- Participants of the pilot
- Friendly laboratories for donations of urine
- The staff of UK NEQAS for Microbiology
- Tim Chambers (BSc Placement Student)