

Evaluation of a rapid antigen test for detection of *Streptococcus pneumoniae* in urine from patients ≥ 65 years hospitalized for community-acquired pneumonia

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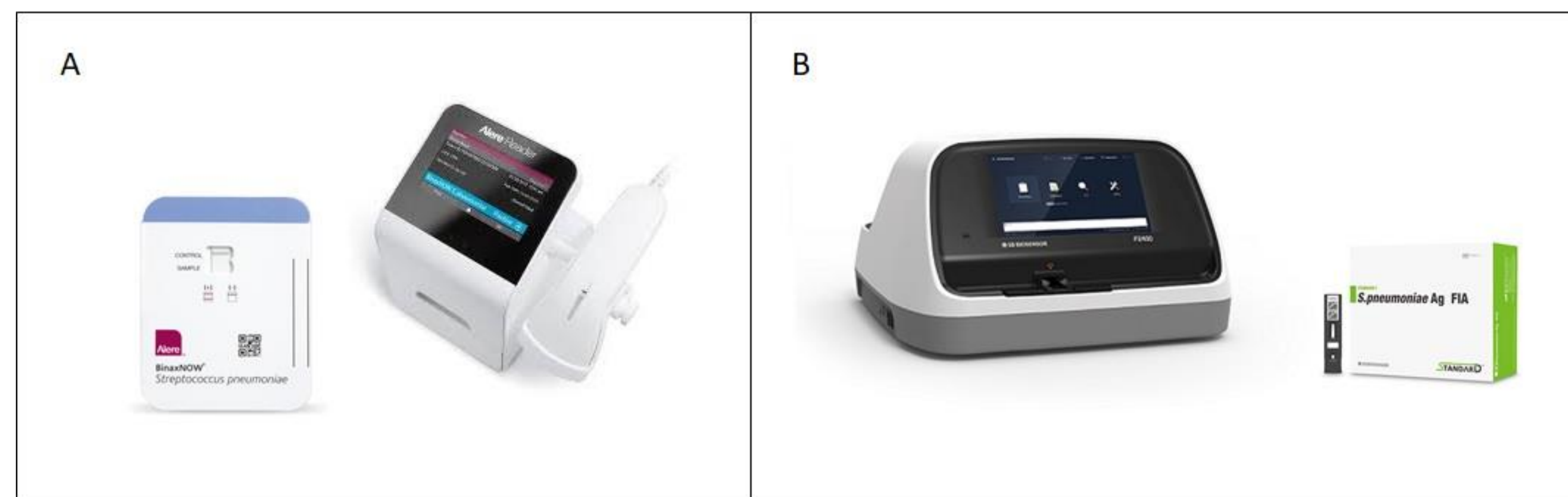
Background. The use of effective, rapid and low-cost urinary antigen tests, helping to provide an etiological diagnosis in community-acquired pneumonia (CAP), is supported by antimicrobial stewardship policies. This study evaluated the diagnostic accuracy of the STANDARD™ F *S. pneumoniae* Ag test (SD Biosensor) to detect pneumococcal antigen in urine specimens, compared with the BinaxNOW® *S. pneumoniae* rapid immunochromatographic membrane test (Abbott).

Materials/Methods. The study is a single-center, retrospective, non-inferiority evaluation of STANDARD™ F *S. pneumoniae* Ag fluorescent immunochromatography test, performed at Policlinic Teaching Hospital “San Martino” in Genoa, capital of Liguria region, North-West Italy. Urine specimens (n=132) from patients ≥ 65 years hospitalized for radiologically confirmed CAP were included in the study.

Results. 26/132 (19.7%) and 106/132 (80.3%) urine specimens respectively resulted positive and negative for pneumococcus by BinaxNOW® test. The STANDARD™ F test had sensitivity of 100% and specificity of 97.2%; assuming the prevalence of pneumococcal CAP in a tested population to be 19.7%, then PPV=sensitivity and NPV=specificity (Table 1a). A strong correlation between the 2 urinary antigen assays was seen (overall agreement of 97.7%, κ -coefficient=0.93).

Three samples resulted positive using STANDARD™ F test and negative using BinaxNOW® test. All the discordant samples were centrifuged for 15 min at 1000 rpm and retested using both systems. After this treatment only one discordant sample resulted positive for both the systems, while the other 2 discordant results were confirmed (Table 1b).

Conclusions. The STANDARD F *S. pneumoniae* Ag test in urine specimens yields a rapid and very reliable diagnosis of pneumococcal CAP, enabling prompt and adequate treatment.



A. Alere™ Reader with Alere BinaxNOW® Streptococcus (Abbott).

B. STANDARD™ F2400 Analyzer with S.pneumoniae Ag FIA (SD Biosensor)

a) Not-concentrated urine		S. pneumoniae Ag FIA (SD Biosensor)	
		Positive	Negative
BinaxNOW S. pneumoniae (Abbott)	Positive	26	0
	Negative	3	103
b) Concentrated urine		S. pneumoniae Ag FIA (SD Biosensor)	
		Positive	Negative
BinaxNOW S. pneumoniae (Abbott)	Positive	27	0
	Negative	2	103

Table 1. a) Detection of *S. pneumoniae* antigen in non-concentrated urine specimens by STANDARD™ F *S. pneumoniae* Ag test (SD Biosensor) and BinaxNOW® *S. pneumoniae* test (Abbott)

Table 1, b) Detection of *S. pneumoniae* antigen in concentrated urine specimens by STANDARD™ F *S. pneumoniae* Ag test (SD Biosensor) and BinaxNOW® *S. pneumoniae* test (Abbott).

Conflict of interest: none declared

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