

STANDARD™ F *STREPTOCOCCUS PNEUMONIAE* AG FIA TEST EVALUATION ON THE QUALITATIVE DETECTION OF THE CAPSULAR ANTIGEN OF DIFFERENT *S. PNEUMONIAE* SEROTYPES

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Background

S. pneumoniae is the leading cause of community-acquired pneumonia (CAP), especially in children (aged less than 5 years) and in the elderly. It is the most common cause of bacterial meningitis in adults. Although culture represents the diagnostic gold standard, tests for the detection of pneumococcal capsular Ag in the urine and CSF offer rapid results for the initiation of appropriate antibiotic therapy. As Reference Centre for Invasive Diseases, 4840 strains isolated in Lombardy were collected, serotyped and stored during the last ten years (Figure 1).

Materials/methods:

STANDARD™ F *S.pneumoniae* Ag FIA is a fluorescent immunochromatography assay for the qualitative detection of the capsular antigen of *S. pneumoniae* in urine and CSF. The kit is validated to detect 20 different serotypes (as for most kits on sale). Figure 1 shows the distribution of the most widespread *S. pneumoniae* serotypes collected in our Reference Centre, identifying 62 different serotypes. Table 1 classifies the 17 serotypes detected by the instrument and the remaining 45 not validated. Each serotype in Table 1 was tested three times at different burden: 10⁸-10⁴-10² CFU/ml. The value of the fluorescence, Cut-Off-Index (COI), emitted by samples and reported on the instrument was recorded.

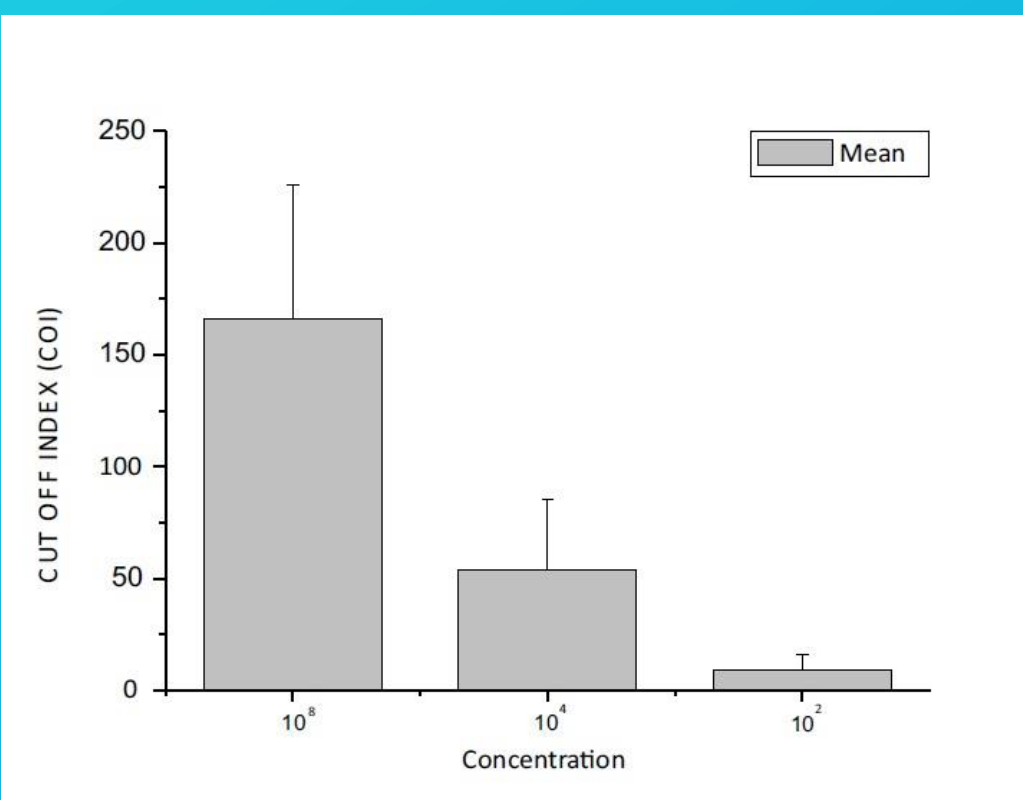


Figure 2: Mean COI values of the at the 10⁸, 10⁴, 10² CFU/ml

Results

All 62 serotypes were detected up to the lowest burden, 10² CFU/ml. The means of the values of the COI were 166.08±60.00 for the 10⁸CFU/ml, 53.82±31.66 for the 10⁴CFU/ml and 9.44±6.68 for the 10²CFU/ml. (Figure 2).

Conclusions: The results obtained with STANDARD™ F *S.pneumoniae* Ag FIA (SD Biosensor) show the ability to detect 62 among the more frequent serotypes of *S.pneumoniae* isolated from CSF and blood up to 10² CFU/ml. Common capsular antigenic features shared by different *S. pneumoniae* can explain the ability to detect serotypes not validated. This test can be considered a valid diagnostic option for the detection of *S. pneumoniae* infection. The COI value could be related with the pneumococcal antigen concentration of the samples.

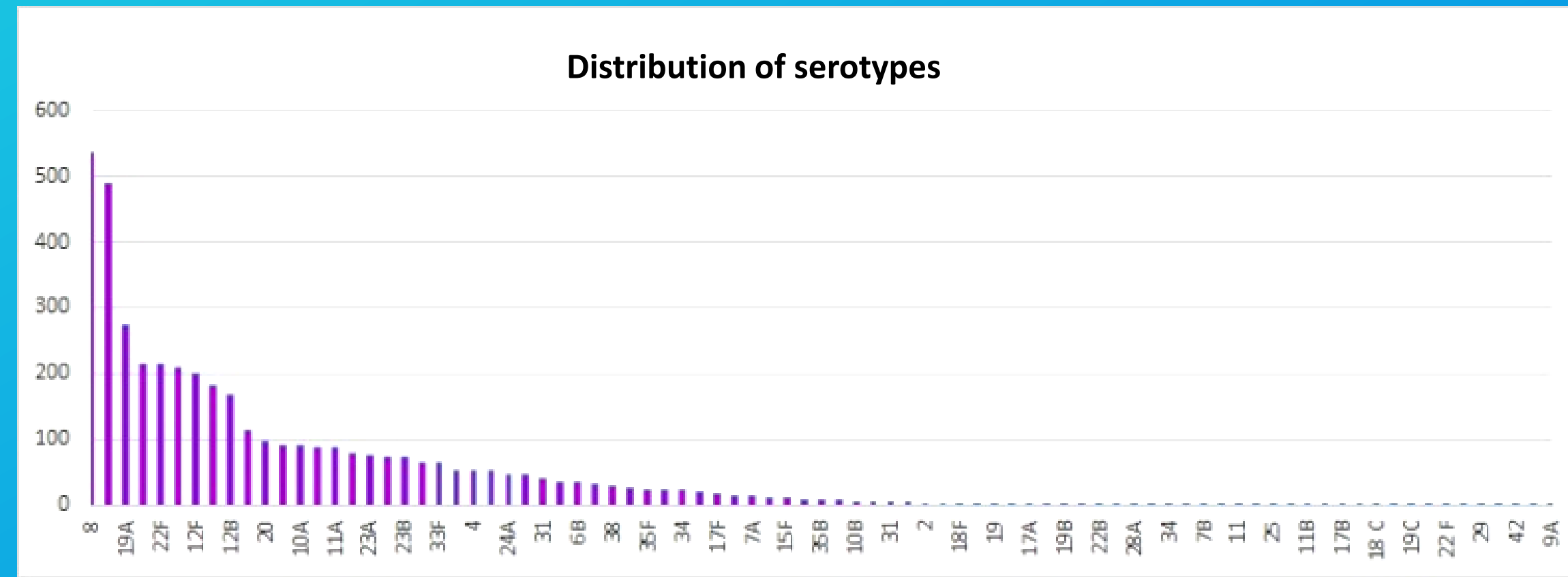


Figure 1: Distribution of *S. pneumoniae* serotypes



TESTED SEROTYPES									
VALIDATED SEROTYPES	1	3	5	6A	6B	8	9V	12F	14
	15A	15B	18C	19A	19F	20	21	23F	
NOT VALIDATED SEROTYPES	6C	7B	7C	7F	9L	9N	10A	10B	10C
	11A	11D	12A	12B	12F	13	15C	15F	16A
	16F	17A	17F	18A	18B	18F	19B	22A	22F
	23A	23B	24A	24B	24F	25A	25F	28A	28F
	29	31	33A	33F	34	35A	35B	35F	38

Table 1: 62 different serotypes tested