

INCREASED *Streptococcus pneumoniae* SURVEILLANCE IN LATIN AMERICA

SIREVA-VIGIA GROUP

1999 - 2002

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INTRODUCTION

Since 1994, the Pan American Health Organization (PAHO) has coordinated a surveillance network with National Reference Laboratories in Latin America aimed at monitoring capsular types and antimicrobial susceptibility of *Streptococcus pneumoniae* causing invasive disease, mainly in the pediatric population.

The availability of a conjugated heptavalent vaccine (PNCRm7), the on-going development of expanded vaccine formulations, and the geographic and age-related differences in seroprevalence that have been reported world-wide reinforce the importance of regional surveillance of *S. pneumoniae*. We present serotype distribution and penicillin and cefotaxime/ceftriaxone susceptibility of invasive pneumococcal isolates from 15 Latin American countries: Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Dominican Republic, Ecuador, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela.

MATERIAL AND METHODS

Jointly funded by PAHO and the Canadian International Development Agency since in 1994, the SIREVA-VIGIA Latin American Group has grown from 6 to more than 15 countries that are participating in epidemiological surveillance of invasive pneumococcal disease, mainly in the pediatric population. Data presented here include capsular serotype distribution and penicillin and cefotaxime/ceftriaxone susceptibility of invasive pneumococcal isolates collected from 15 countries between January 1999 and December 2002.

Strains were identified by standard methods and serotyped by Quellung reaction with pooled, type or group and factor sera from Statens Serum Institut, Copenhagen, Denmark.

Antimicrobial susceptibility testing for penicillin and cefotaxime/ceftriaxone was performed using the NCCLS reference broth microdilution method. *S. pneumoniae* ATCC 49619 was included as the control strain.

The SIREVA-VIGIA Group collaborates with the National Centre for Streptococcus (NCS) in Edmonton, Canada. That Centre coordinates an ongoing quality control/quality assurance program for serotyping and antimicrobial susceptibility testing for 3 sub-regional laboratories: Brazil, Colombia and Mexico. Each of those sub-regional laboratories uses the NCS model as a basis for the quality control programs that they provide for their specified participating countries Figure 6.

Southern region (Argentina, Uruguay, Paraguay, Chile and Brazil), Central region (Colombia, Venezuela, Ecuador, Peru and Bolivia) and Northern region (Dominican Republic, Cuba, Panama, Mexico and Nicaragua).

RESULTS

From January 1999 to December 2002, a total of 8,047 invasive pneumococcal isolates were collected from 15 Latin American countries: Argentina (762), Bolivia (47), Brazil (2345), Chile (1744), Colombia (816), Cuba (284), Dominican Republic (292), Ecuador (28), Mexico (268), Nicaragua (24), Panama (42), Paraguay (535) Peru (55), Uruguay (552) and Venezuela (253). Sixty percent of those isolates were from children < 6 years old who were diagnosed primarily with pneumonia (47%) and meningitis (43%).

Figures 1 and 2 show the most frequent serotypes from children less than 6 years of age, and for older children and adults. Figure 3 shows distribution by region.

Reduced susceptibility to penicillin was detected in 36.3% of isolates from children < 6 years of age (20.3% were intermediate and 16.0% were resistant). These data are shown by region in Figure 4. Among isolates from children with meningitis, 6.8% showed intermediate resistance and 3.7% were fully resistant to cefotaxime/ceftriaxone with minor regional differences as shown in Figure 5.

Figure 3
Major pneumococcal serotype in Latin American children < 6 years of ages 1999 - 2002

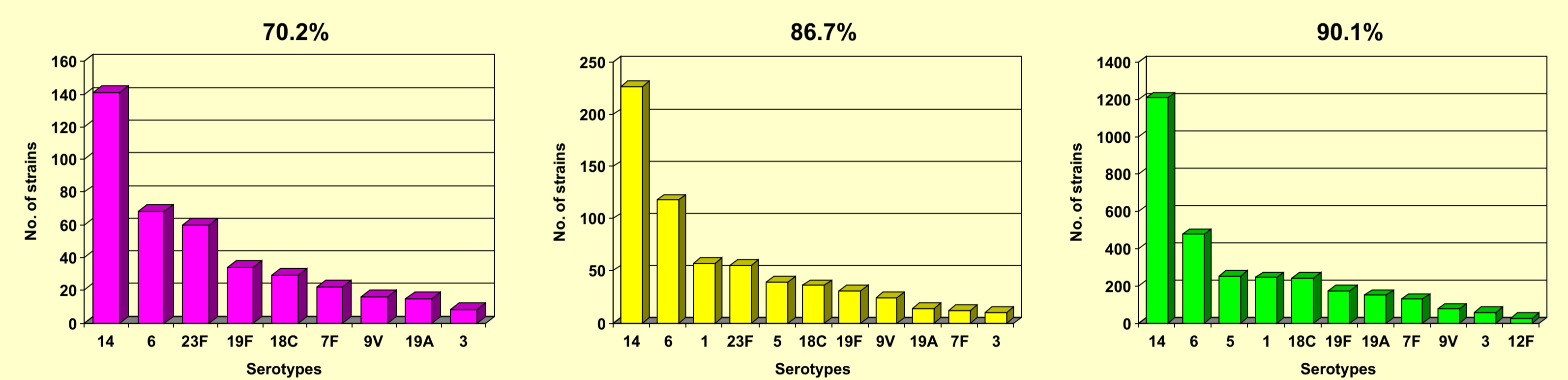


Figure 4
Susceptibility to penicillin of *S. pneumoniae* in Latin American countries 1999 - 2002

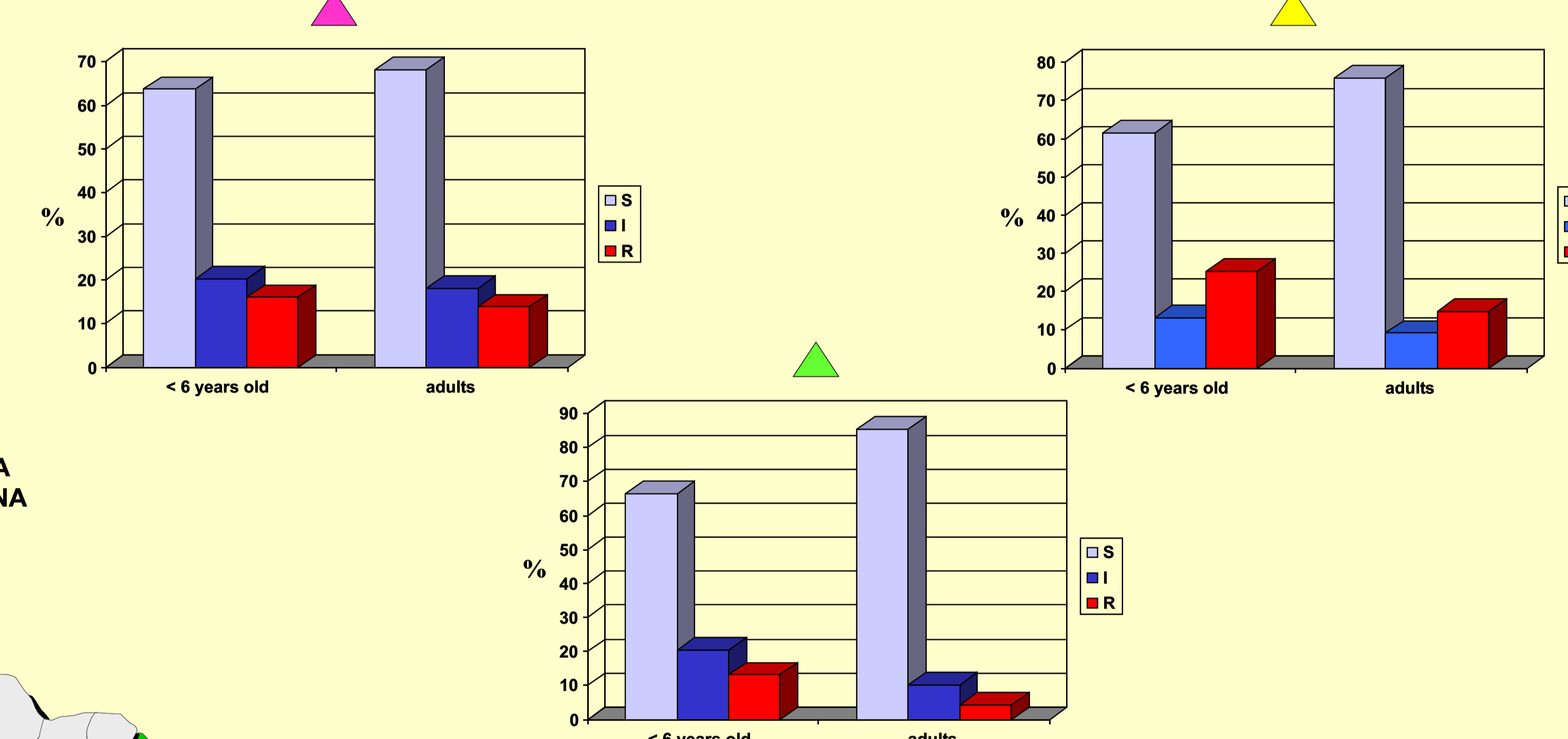


Figure 5
Antimicrobial susceptibility against cefotaxime/ceftriaxone of *S. pneumoniae* isolated from children with meningitis in Latin American countries

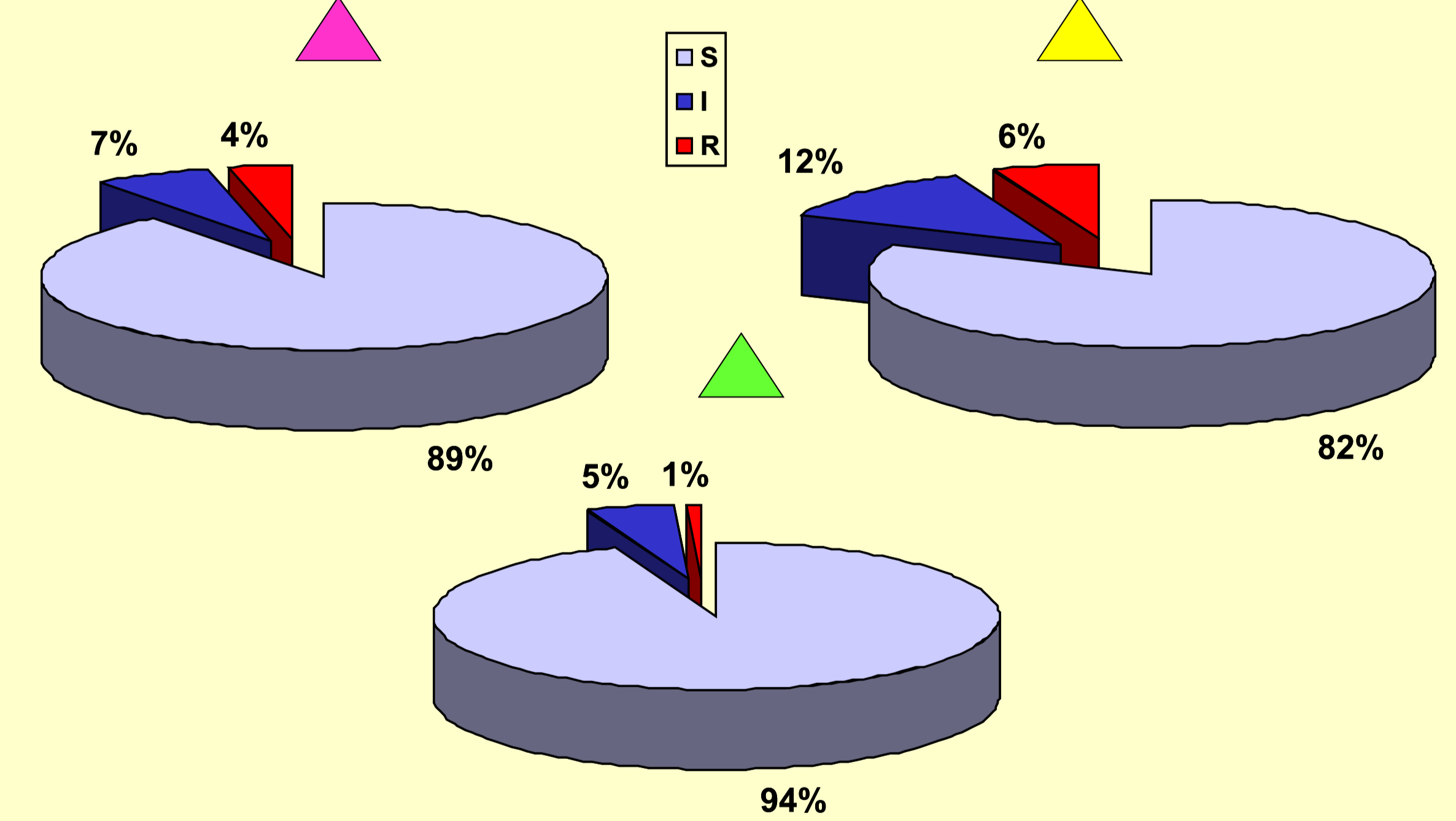


Figure 6
Quality control/quality assurance program SIREVA-VIGIA working group



CONCLUSIONS

The comparison between data from 15 Latin American countries (1999-2002) and those from the previous period (1993-1998) showed no significant differences in the distribution of pneumococcal serotypes, even though 8 countries have been added to the pneumococcal network. Serotypes 1, 5 and 19A remains as important types not included in the current available vaccines which represent important pathogens in our countries.

With this serotype distribution, the 7-valent vaccine has coverage of 65.9%, 68.1% and 58.4% in the southern, central and northern parts of the region, respectively. An increased in penicillin and third generation cephalosporin resistance was observed in all countries.

Continued nationwide surveillance of pneumococcal infections remains a priority and should be encouraged and supported specially in developing countries where the benefits of vaccination and proper use of antimicrobials have a high impact on improvement of public health.

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Figure 1
Serotype distribution of *S. pneumoniae* in Latin American children < 6 years of age 1999 - 2002

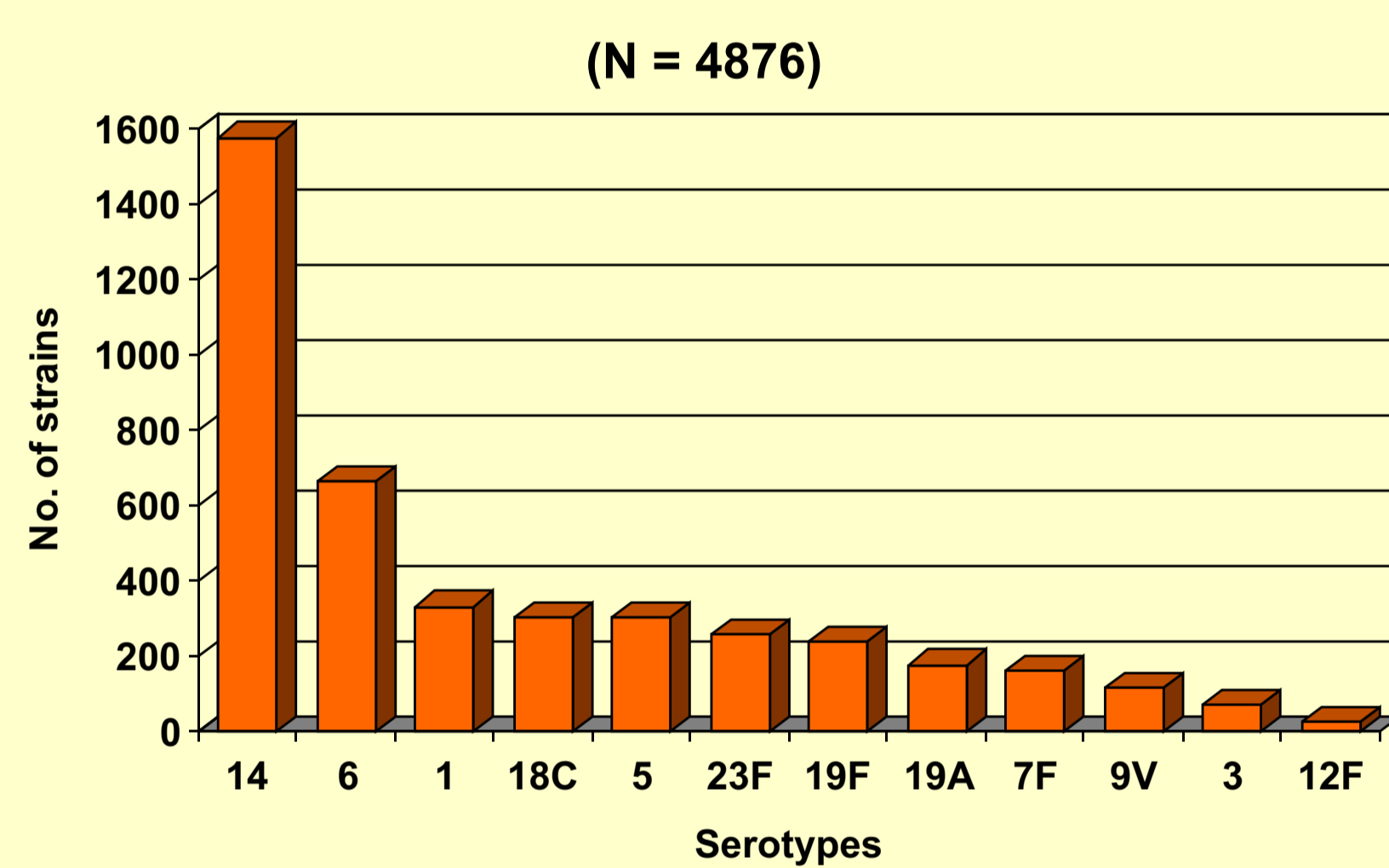
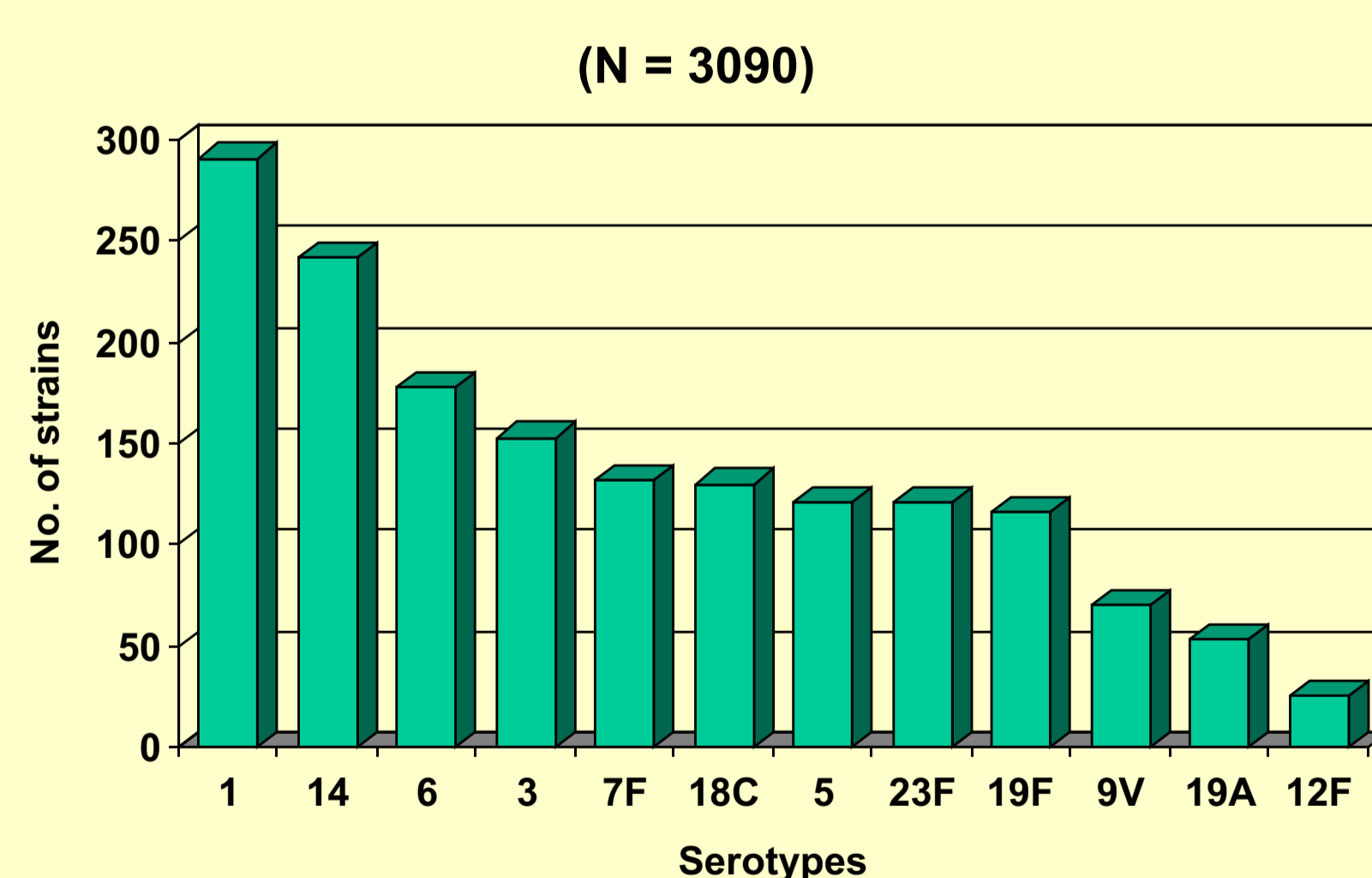


Figure 2
S. pneumoniae serotypes in children > 6 years of age and adults in Latin American countries 1999 - 2002



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