

PNEUMOCOCCAL CARRIAGE AND SEROTYPE DISTRIBUTION PRE- AND POST- PCV10 VACCINATION CAMPAIGN



IN ADJUMANI REFUGEE CAMPS, UGANDA

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Background

- Acute respiratory infections account for high morbidity and mortality in emergency settings
- In 2014, MSF conducted a mass vaccination campaign (MVC) with PCV10 among children 6 weeks to 23 months in refugee settlements in Adjumani, Uganda
- Three pneumococcal carriage surveys were conducted (one prior to, and two post, the MVC)

Objectives

This presentation describes the impact of the MVC on the all-age pneumococcal carriage and serotype distribution.

Methods

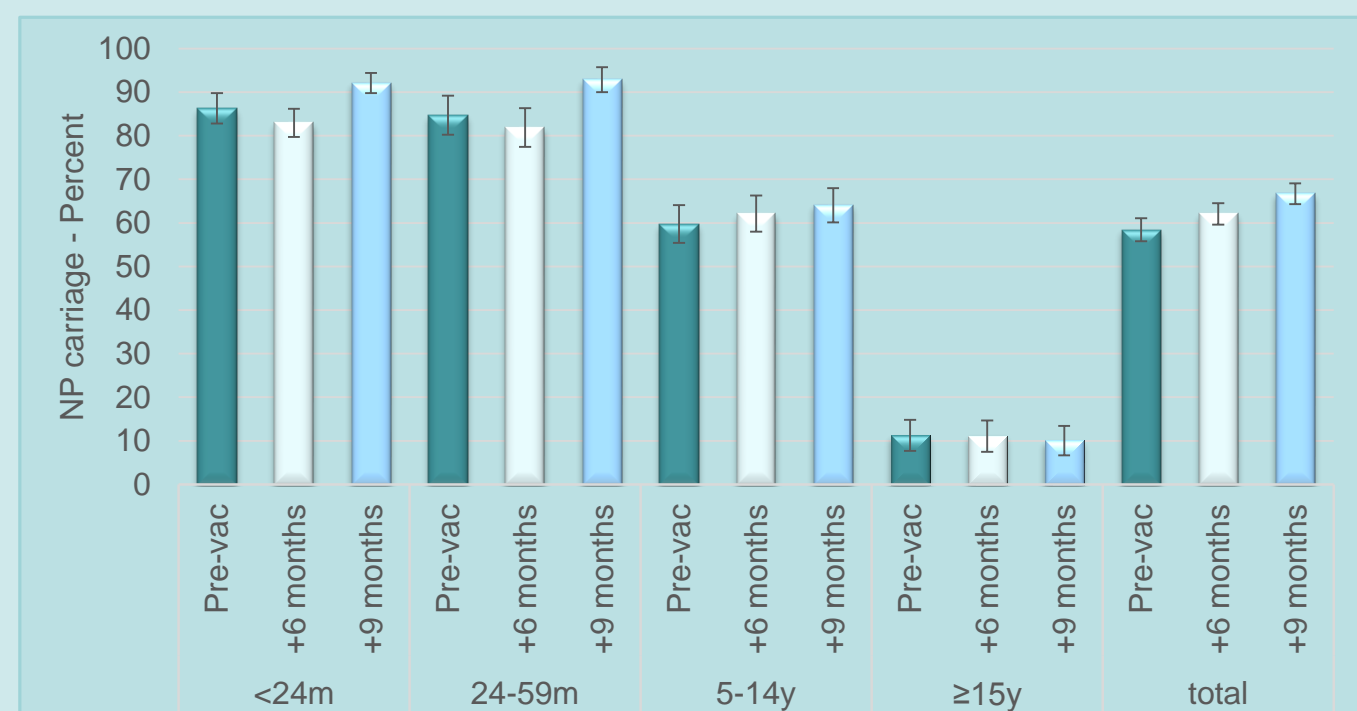
- Three nasopharyngeal (NP) pneumococcal carriage household surveys (respectively in July 2014, March and June 2015) were carried out among residents (all ages).
- Streptococcus pneumoniae* was cultured from NP swab specimens. All pneumococcal isolated were serotyped using the Quellung method in Epicentre Mbarara-Uganda Laboratory.
- In addition, MSF conducted a vaccination coverage cluster survey among children aged between 6 weeks and 23 months in October 2014.

Results

Among eligible children, 96% (95%CI: 94-98) received at least 1 dose, while 51% of children 0-11 months and 78% of those 12-23 months were considered fully vaccinated. At 95%CI, among children aged 6 weeks to 23 months, 96% (94-98%), 78% (75-82%), and 43% (39-47%) received 1, 2, and 3 doses, respectively.

At 9 months post-MVC, overall pneumococcal carriage had increased from 58% (95%CI: 56-61) to 67% (95%CI: 64-69); among children <24 months, carriage increased from 86% (95%CI: 83-90) to 92% (95%CI: 90-94). Total carriage of vaccine-targeted serotypes decreased from 37% (95%CI: 34-40) to 15% (95%CI: 14-18) and from 49% (95%CI: 44-54) to 17% (95%CI: 14-21) among children

Figure 1: Total pneumococcal carriage: by age and round



Conclusion

This is the first study reporting pneumococcal carriage estimates pre-and post-vaccination in Uganda. The low vaccine coverage for the 2nd and 3rd doses may have affected the vaccination effectiveness; complete dosing should be emphasized in the future. Overall NP pneumococcal carriage increased, with significant and rapid replacement of vaccines serotypes by non-vaccines serotypes in all age-groups. High-quality surveillance of invasive pneumococcal disease is necessary to evaluate the impact of PCV immunization on the burden of PCV-associated morbidity and mortality.

Table 1: Vaccine type pneumococcal carriage: by age group and round

| Age group | | Survey 1 % (95% CI) | Survey 2 % (95% CI) | Survey 3 % (95% CI) |
|--------------|-----------------------|------------------------|------------------------|------------------------|
| <24 months | PCV-10 serotypes | 49.1 (43.8 - 54.4) | 17.7 (14 - 21.4)* | 17.4 (14 - 20.8)* |
| | PCV-13 serotypes only | 19.3 (15.1 - 23.6) | 26.4 (22.1 - 30.7)* | 23.1 (19.3 - 26.9) |
| 24-59 months | PCV-10 serotypes | 36.7 (30 - 43.4) | 19.9 (15.2 - 24.7)* | 19.1 (14.6 - 23.6)* |
| | PCV-13 serotypes only | 19.3 (13.9 - 24.7) | 22.8 (17.8 - 27.7) | 20.1 (15.5 - 24.7) |
| 5-14 years | PCV-10 serotypes | 27.4 (21.8 - 33) | 18.8 (14.5 - 23.1)* | 10.5 (7.2 - 13.8)* |
| | PCV-13 serotypes only | 20 (15.1 - 24.9) | 15 (11 - 18.9)* | 21.3 (16.8 - 25.8) |
| ≥15 years | PCV-10 serotypes | 14.9 (2.3-27.4) | 12.5 (0.8-25.8) | 0 (0 - 0) |
| | PCV-13 serotypes only | 16.2 (0.1-32.5) | 25 (7.7-42.3) | 15.8 (0.6-32.2) |
| Total | PCV-10 serotypes | 36.7 (33.4 - 40.0) | 18.5 (16.1 - 20.9)* | 15.4 (13.3 - 17.6)* |
| | PCV-13 serotypes only | 19.5 (16.7 - 22.2) | 21.8 (19.2 - 24.3) | 21.6 (19.2 - 24.1) |

*: p<0.05 Comparison is with Round 1

Figure 2: Pneumococcal serotype distribution: all ages, all rounds

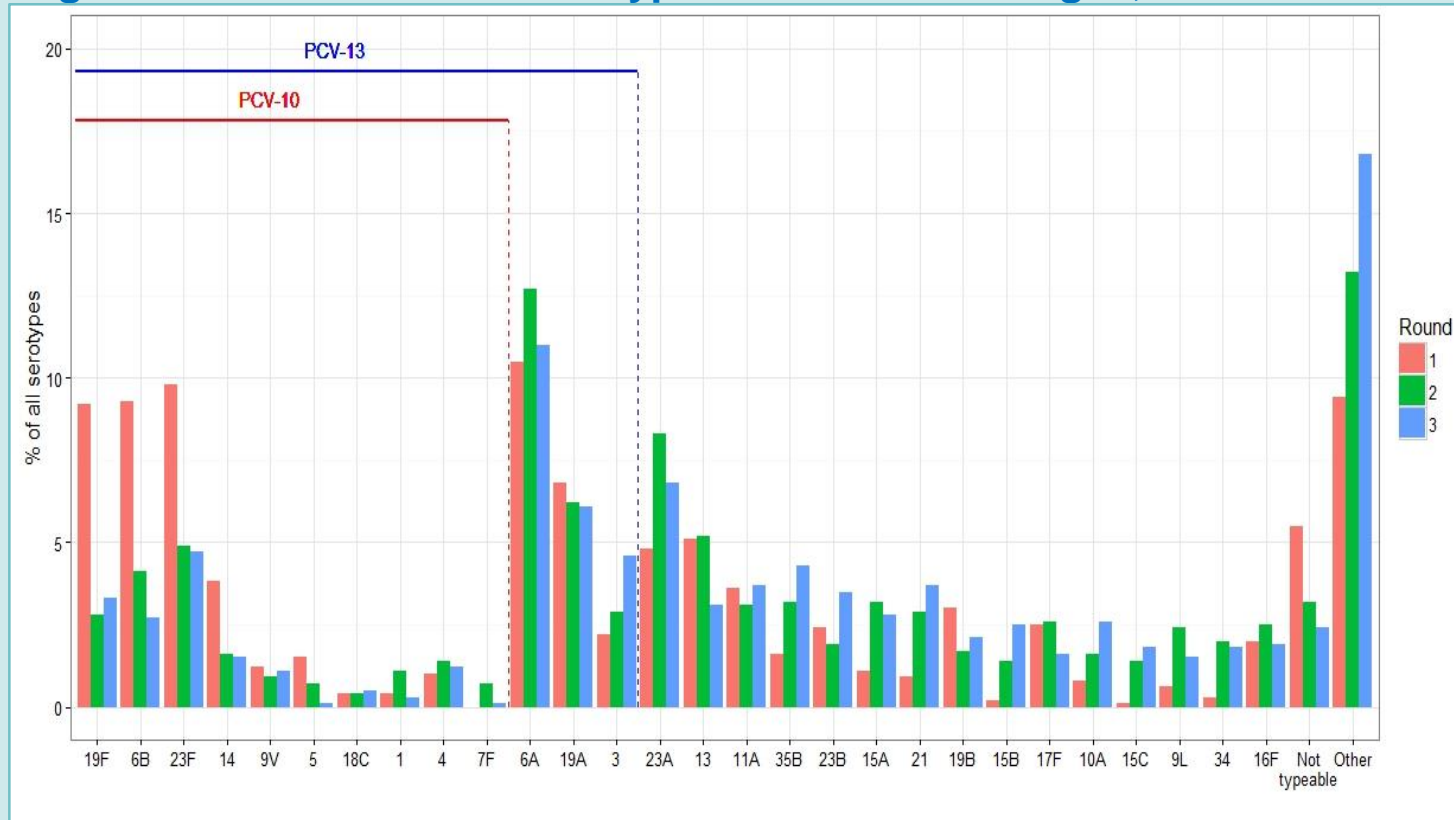


Figure 3: Pneumococcal serotype distribution: <24 mos, all rounds

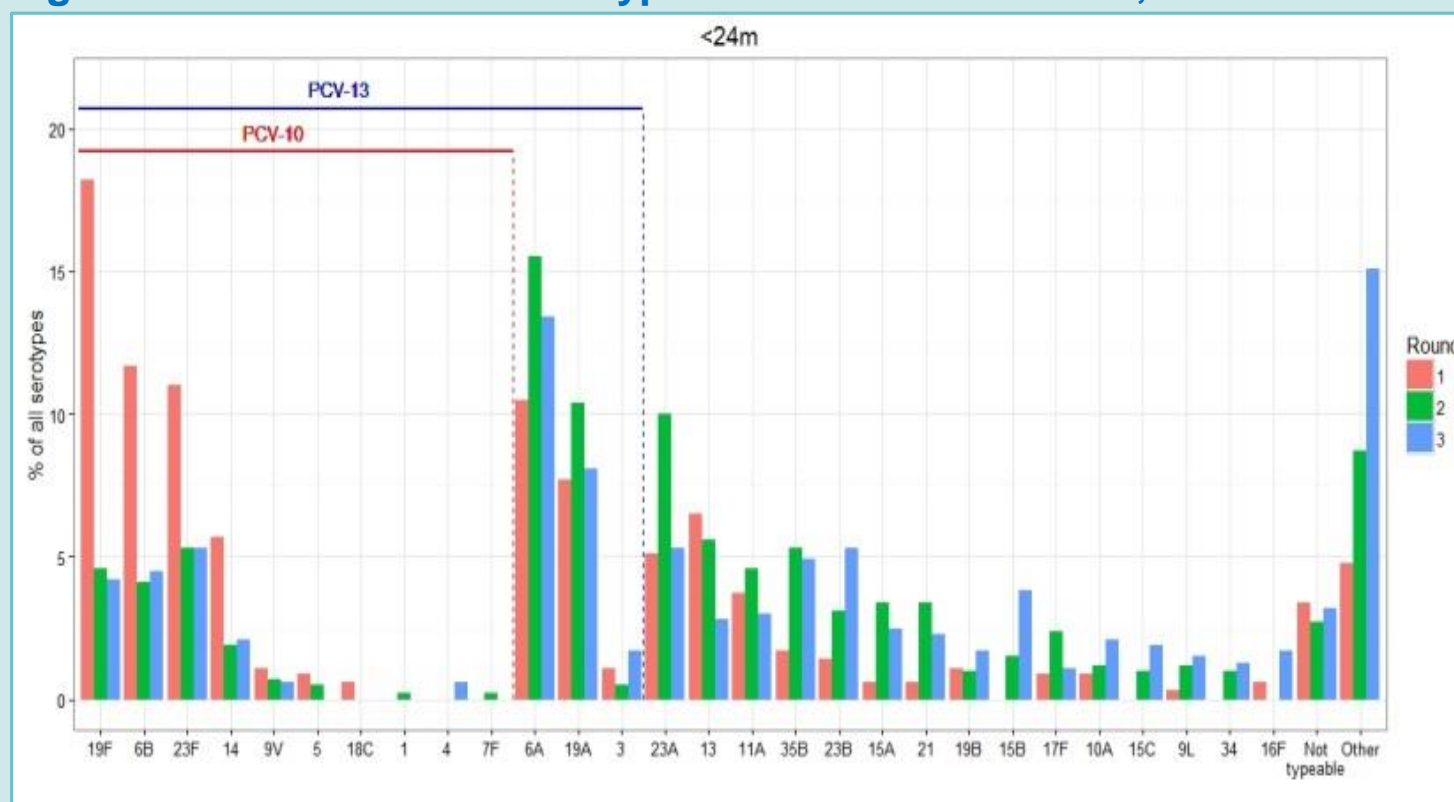


Figure 4: Pneumococcal serotype distribution: 24-59 mos, all rounds

