INTRODUCTION

Seasonal malaria chemoprevention (SMC)

- Recommended in the Sahel
- Monthly courses of sulfadoxine-pyrimethamine and amodiaquine (SP-AQ) administered to children aged 3-59 months during the high-transmission rainy season
- Clinical trials show a decrease in malaria incidence of up to 75%
- Expanding target age group has been beneficial in at least one trial\textsuperscript{1}, but has not been explored in Niger

Magaria Health District, Zinder Region, Niger

- Population 744,268, one of the most densely-populated districts in Niger.
- MSF supports MOH in implementing SMC since 2013
- Over 110,000 children living in the target area receive SP-AQ each month between July and October

OBJECTIVE

In order to evaluate the appropriateness of potentially expanding the SMC target population, we conducted surveys to estimate the prevalence of parasitemia during different malaria transmission seasons in three age groups:

- 3-59 months
- 5-9 years
- ≥10 years

RESULTS

- 263 households were included in October and 268 households included in December
- Absenteeism among children aged 5-9 years was high; only 130 were included in October and 153 in December
- Overall prevalence of parasitemia
  - October: 43% (95%CI 39-48)
  - December: 40% (95%CI 37-44)
- No differences by sex

<table>
<thead>
<tr>
<th></th>
<th>October (N=588)</th>
<th>December (N=634)</th>
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</thead>
<tbody>
<tr>
<td><strong>Prevalence of parasitemia by age</strong></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>3-59 months</td>
<td>51.9\textsuperscript{*}</td>
<td>48.1\textsuperscript{†}</td>
</tr>
<tr>
<td>5-9 years</td>
<td>66.2</td>
<td>64.1</td>
</tr>
<tr>
<td>≥10 years</td>
<td>23.6</td>
<td>21.0</td>
</tr>
<tr>
<td><strong>Median parasitemia (parasites/μl), IQR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-59 months</td>
<td>6066\textsuperscript{§}</td>
<td>1281-26065</td>
</tr>
<tr>
<td>5-9 years</td>
<td>1516\textsuperscript{‡}</td>
<td>530-5705</td>
</tr>
<tr>
<td>≥10 years</td>
<td>189\textsuperscript{‡}</td>
<td>126-629</td>
</tr>
<tr>
<td><strong>Prevalence of gametocytemia by age</strong></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>3-59 months</td>
<td>19.3\textsuperscript{†}</td>
<td>12.4\textsuperscript{‡}</td>
</tr>
<tr>
<td>5-9 years</td>
<td>18.5</td>
<td>13.1</td>
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<tr>
<td>≥10 years</td>
<td>4.9</td>
<td>1.5</td>
</tr>
</tbody>
</table>

\textsuperscript{*} Adjusted Wald p<0.005 between 3-59m and 5-9y; p>0.0001 for both groups of children and adults
\textsuperscript{†} Adjusted Wald p<0.001 between 3-59m and 5-9y; p>0.0001 for both groups of children and adults
\textsuperscript{‡} Kosovo Device p<0.001 for age in each survey
\textsuperscript{§} Between two surveys: Mann-Whitney p>0.0001 for children 3-59m; p=0.0022 for children 5-9y; p=0.0001 for persons ≥10y

DISCUSSION AND CONCLUSION

- Low-season prevalence not actually low, survey occurred too early
- Prevalence of parasitemia high among children <5 despite SMC, but prevalence of clinical malaria low
- Children aged 5-9 years have a high prevalence of parasitemia and gametocytemia, it would be logical to include them in SMC in this area
  - But additional cost and effort might be high if scaled-up

METHODS

- Two surveys:
  - High season: 9-11 October 2016
  - Low season: 21-23 December 2016
- All villages in catchment areas of 6 health centers, with number of households included per village proportional to population of village
- Random selection of households: spatial sampling using Google Earth and handheld GPS devices
- One household member from each age stratum selected using random numbers table
- Target sample size in high season was 396 households; in low season it was 266 households.
- Febrile participants tested with rapid diagnostic test on-site and treated per national guidelines
- Thick and thin smears for all participants
- Double-reading of slides with external QC at WHO-certified center of excellence
- Ethical approval from MSF-ERB and National Consultative Ethics Committee of Niger

References

\textsuperscript{1} Cissé B et al, PLoS Medicine 2016;13:11