Trachoma prevalence in Niger: results of 31 district-level surveys

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intervention in these regions, with the prevalence among adults exceeding 1% in Diffa, Maradi, Tahoua and Zinder regions. The current era of SAFE implementation in Niger began in 1999, with ongoing implementation throughout eastern Niger (Diffa, Maradi and Zinder regions). In general, SAFE implementation in Niger includes provision of free trichiasis surgery via local health facilities (S), annual mass antibiotic distribution of azithromycin (indicated for the general population) or 1% tetracycline eye ointment (indicated for infants $<$1 year of age and pregnant women) targeted to the entire population (A), hygiene promotion through primary school health education, community health education, rural radio and local soap production (F), and household latrine promotion (E). Mass drug administration (MDA) for trachoma

discharge was recorded on the census form. Clinical examinations for all children and adults were performed using the WHO Simplified Grading System.[4] Examiners graded clinical stages using a 2.5x binocular loupe and flashlight then recorded the presence or absence of clinical signs for each eye on the census form.

Training and survey implementation

District-level surveys were implemented in groups over a 3-year period. Before each group of districts was surveyed, survey team members attended a 4-day training course on data collection procedures, including questionnaire administration and household selection using the map and segment method. Upon completing classroom-based training exercises, survey team members were evaluated during a pilot test of the survey in a community not selected for the survey. Ophthalmic nurses were recruited to conduct clinical examinations and were required to pass an inter-observer reliability test of trachoma grading against a standardized set of 50 photographs and a field examination of 50 children each. Only nurses who demonstrated at least 80% reliability compared to a gold standard grader were retained for survey implementation.

Data management and statistical analysis

Data were collected on paper forms and double-entered into a Microsoft Access® spreadsheet. Data entry errors were corrected by verification against the original paper form. Clusters, households and household members were assigned unique identification numbers to de-identify the datasets. The prevalence of TF was estimated as the proportion of children aged 1–9 years

present at the time of the survey and the prevalence of TT was estimated as the proportion of adults aged 15 years and older present at the time of the survey. To account for the cluster design, point estimates and 95% confidence intervals were esti-

Table 3. Clinical signs of trachoma, by district, in Nigerien households surveyed during 2009–2011

District	In children aged 1–9 years						In adults aged ≥15 years		In all ages	
	TF		TI		Unclean face		TT		Participation in MDA reported	
	n (%)	95% CI	n (%)	95% CI	n (%)	95% CI	n (%)	95% CI	n (%)	95% CI
Abalak	10 (1.5)	(0.2–2.9)	5 (0.8)	(0.0–1.8)	312 (48.6)	(40.5–56.8)	0 (0.0)	[a]	871 (52.3)	(35.0–69.6)
Boboye	25 (4.6)	(2.3–6.9)	6 (1.1)	(0.3–1.9)	223 (41.4)	(34.4–48.4)	0 (0.0)	[a]	1250 (84.4)	(78.8–90.0)
Bouza	86 (10.2)	(5.5–14.9)	8 (1.0)	(0.0–1.9)	315 (38.0)	(32.6–43.4)	3 (0.4)	(0.0–0.9)	1544 (84.8)	(77.0–92.7)
Dakoro	78 (8.3)	(5.6–10.9)	9 (1.0)	(0.3–1.6)	631 (68.3)	(63.3–73.4)	5 (0.6)	(0.0–1.2)	1755 (83.9)	(79.8–88.0)
Dosso	19 (2.5)	(1.0–4.0)	3 (0.4)	(0.0–0.8)	156 (20.4)	(15.3–25.4)	8 (1.0)	(0.3–1.6)	1402 (79.8)	(66.7–92.9)
Doutchi	118 (16.3)	(9.18–23.4)	14 (1.9)	(0.4–3.5)	321 (44.3)	(38.1–50.6)	0 (0.0)	[a]	1500 (82.7)	(72.2–93.2)
Filingue	14 (1.7)	(0.6–2.9)	0 (0.0)	[a]	367 (45.6)	(40.9–50.3)	0 (0.0)			

located inside the household was reported among 839 households (4.2%, 95% CI: 2.8–5.6). An additional 8333 households (63.3%, 95% CI: 60.6–66.1) reported access to a water source within the boundaries of their community and 4937 households (32.5%, 95% CI: 29.3–35.7) reported traveling beyond their community to collect water. Table 2 presents the results of household characteristics by district.

We present the results of the clinical examination by district in Table 3. A total of 16 districts were found to have a prevalence of TF among children 1–9 years of age (point estimate) $>$10%. The prevalence of TF among children ranged from 0.1% (Gaya) to 42.4% (Magaria). Two districts were estimated to have a prevalence point estimate of TF between 5% and 9% and 13 districts had a TF prevalence point estimate of $<$5%. Countrywide, clean face was observed in 12 298 children out of 23 880 examined (46.6%, 95% CI: 39.3–40.9) aged 1–9 years of age (clean face data were

6 51st World Health Assembly. Global elimination of blinding trachoma. Resolution 51.11. Geneva: WHA; 1998.