Local antibacterial treatment of conjunctivitis caused by susceptible strains: Purulent bacterial conjunctivitis, Trachomatous conjunctivitis caused by Chlamydia trachomatis. Consideration should be given to official guidance on the appropriate use of antibacterial agents.

« Any antibiotics prescription has an impact on the bacterial resistances. It must be justified. »

* According to the criteria of the WHO Alliance for the world elimination of blinding trachoma by 2020
Although most countries have managed to eliminate trachoma, it still ravages the poorest areas of over 50 countries, most of which are in Africa according to the global estimates of the World Health Organization. Close to 80 million people and 6 million blind or visually impaired individuals are affected by the active form of this miserable and promiscuous disease.

In the mid-1990’s, the WHO Alliance for the Global Elimination of Blinding Trachoma by the year 2020 described the “SAFE” strategy, which combines medical and surgical measures and, in order to perpetuate the effect, individual and collective hygienic measures. Antibiotic therapy remains the key link of the SAFE strategy, with oral azithromycin chosen for its prolonged action and short treatment duration.

In 1997 the WHO Alliance delivered an international request to the pharmaceutical industry for the development of a topical form of azithromycin [2]. It seemed that I could not remain deaf to this appeal and that I had to provide a response. This is how the long programme of development of azithromycin eye drops thus began in 1999, which had to last 8 years due to technical difficulties related chiefly to the pharmaceutical dosage form. European approval of Azyter was obtained in 2007.

As part of the SAFE strategy implementation framework, Thea Laboratories was requested during a WHO meeting to validate the efficacy of Azyter eye drops in the mass treatment of trachoma in a hyperendemic area. Therefore in 2008, 2,160,000 doses of these eye drops were transported and administered during three campaigns by health workers in the Kolofata district in northern Cameroon. After the second campaign, the prevalence of active trachoma went below the epidemiological threshold of 5%, leading to the elimination according to the WHO criteria.

Thea Laboratories was able to turn its attention to other causes, but it is still the destiny of the Chibret family to work on trachoma. My father rallied against this disease in his day in Africa and the Middle East. Not to mention Paul Chibret, founder of the French Society of Ophthalmology, whose active involvement against this plague began in 1870.

They showed the way. Today, I am happy to be supportive of their commitment.

HENRI CHIBRET
ELIMINATION OF TRACHOMA WITH AZYTER®

Results of 3 mass treatment campaigns in the endemic area of northern Cameroon
CONTENTS

FROM AN IDEA TO PRACTICE ................................................................. P6
WHO AND SAFE STRATEGY: ELIMINATING TRACHOMA BY 2020 ................... P10
AZITHROMYCIN EYE DROPS: REQUESTED BY WHO ................................. P12
SAFE STRATEGY APPLIED IN THE FAR NORTH REGION OF CAMEROON WITH AZYTER® ................................................................. P17
ACKNOWLEDGEMENTS ........................................................................... P24
REFERENCES ........................................................................................ P26
Trachoma is a chronic keratoconjunctivitis caused by the bacteria Chlamydia trachomatis. It is spread through human to human transmission via nasal and ocular secretions (towels, tissue, fingers, hands, clothing, etc.) and is most likely promoted by flies, which constitute passive vectors. After several cycles of repeated infection, chronic inflammation induces the development of follicles, papillae and pannus (sub-epithelial infiltration of fibrovascular tissue in the peripheral cornea), which are the three characteristic signs of active trachoma and which indicate the existence of corneal and conjunctival inflammation. Recovery from the disease may be accompanied by fibrotic scarring of the tarsal conjunctiva, which can be the source of retraction and cause trichiasis: the upper eyelid turns inwards and the eyelashes brush against the cornea. When the palpebral margin is turned towards the eyeball, it is called entropion. If early surgical intervention does not occur, the trichiasis results in corneal opacities and irreversible blindness.

The clinical diagnosis of trachomatous conjunctivitis is made through eversion of the upper eyelids and examination of the tarsal conjunctiva using magnifier spectacles. MacCallan’s classification(6) was replaced by the simplified WHO system, which includes 5 grades and facilitates the epidemiological study of the disease(7). The so-called active forms of trachoma are comprised of intense and follicular trachomatous inflammation.

---

**TF grade:** Trachomatous inflammation – Follicular; characterized by the presence of 5 or more follicles on the upper tarsal conjunctiva.

**TI grade:** Trachomatous inflammation – Intense; characterized by marked inflammatory thickening of the tarsal conjunctiva obscuring more than half of the deep tarsal vessels.

**TT grade:** Trachomatous Trichiasis: at least one eyelash brushing against the eyeball, or evidence of recent removal of ingrown eyelashes.

**CO Corneal opacity:** easily visible opacities covering the pupil.
Trachoma is an infectious and contagious ocular disease, which is still currently the main infectious and avoidable cause of blindness. Around 84 million people in the world have active trachoma and 6 million have a severe visual deficit or blindness.

According to the report from the International Coalition for Trachoma Control of July 2011 (24), "The best estimates today suggest that close to 110 million people live in areas where endemic trachoma has been confirmed and where implementation of the SAFE strategy is needed. Furthermore 210 million people live in districts where trachoma is suspected but in which data are not available for initiating interventions. In districts that are confirmed as endemic, some 4.6 million people are in the last stages of the disease and require surgical intervention to prevent them from becoming blind. Otherwise the estimates vary, although it is probable that at least 1 million people in the world have visual deficiency and an additional 750,000 are blind due to trachoma. This means that one new person begins to have severe vision loss every four minutes, and that one additional person becomes blind about every 15 minutes from this devastating disease. Moreover, more than 80% of active trachoma cases are concentrated in 14 countries in which immediate action is needed."
Poverty and lack of hygiene are the main risk factors of trachoma\(^{(3)}\). *Chlamydia* is an atypical intracellular microorganism. Several serotypes have been identified: A, B, Ba and C are currently known causes of trachoma, but types D, E and G, which are sexually transmissible, could also be involved.
It is one of the oldest diseases known in the history of humanity (3000 BC). Once spread over the entire globe, trachoma has now disappeared in many countries with the development of hygiene and social progress. It is still however hyperendemic in the poorest isolated rural regions of Africa, Asia and the Middle East, and more rarely in Australia, South and Central America.

The disease usually starts in childhood. Affected children harbour the bacteria in the conjunctiva, nasopharynx and the rectum, with these various locations demonstrating systemic infection. Isolated inoculations only result in benign forms of trachoma and resolve spontaneously. Multiple reinfections are needed to induce inflammation that is capable of causing blindness. Lack of water, poor individual and collective hygiene, flies, the proximity of livestock, human promiscuity associated with extreme poverty and chronic exposure to the bacteria are the main risk factors of trachoma and promote its complications in adulthood.

Seasonal epidemics of conjunctivitis also contribute to creating favourable conditions for the bacteria. Trachoma easily affects the most vulnerable members of very poor communities, particularly women and children. Adult women have an increased risk of developing blinding forms of trachoma, since they are in close contact with young children, who make up the main reservoir of the infection.
WHO AND SAFE STRATEGY: TO ELIMINATE TRACHOMA BY 2020

The World Health Organization (WHO) leads several initiatives with the aim of eliminating blinding trachoma, including the creation of the GET 2020 Alliance (Global Elimination of Blinding Trachoma by 2020) and the development of a primary care strategy. Thus, in 1996, WHO defined the "SAFE" strategy, a comprehensive management plan for the disease, which has become the standard of care in trachoma.

THIS STRATEGY INCLUDES 4 COMPONENTS:

- **S**
  **Surgery** of the eyelids for patients at immediate risk of blindness.

- **A**
  **Antibiotics**, intended for the treatment of infected individuals and for decreasing the reservoir within a community: tetracycline-based ophthalmic ointment applied for 5 weeks was replaced by oral azithromycin, and very recently a new option was successfully evaluated: a short local treatment with azithromycin eye drops.

- **F**
  **Facial cleanliness** in order to reduce transmission.

- **E**
  **Environmental improvement**: provision of clean water and creation of sanitary facilities.
The final objective of the SAFE strategy is to obtain less than one case of trachomatous trichiasis per 1000 inhabitants in 2020, approximately equal to 1 case of trachomatous corneal opacity per 10,000 inhabitants per year.

WHO has thoroughly described the “S” surgical strategy for trachoma: organization of care (surgical units), training and evaluation of the paramedical team in charge of the interventions, recommended techniques (bilamellar tarsal rotation or Trabut), post-operative follow-up, including the count of the number of recurrences, in particular.

Implementation of the “AFE” portion of the SAFE strategy depends on the prevalence of active trachoma in children aged between 1 and 10 years, according to the guidelines issued by WHO in 2003:

- If the prevalence exceeds 10% in a defined area, the entire population of this area must be treated (mass treatment);
- If the prevalence is less than 10%, only families having at least one infected child must be treated.

Mass treatment must be planned for a minimum period of 3 years and continued until the prevalence of trachoma in children aged 1 to 9 years is less than 5%. Target coverage must include at least 80% of the eligible population.
AZITHROMYCIN EYE DROPS: REQUESTED BY WHO

DRAWBACKS OF THE ORAL FORM

Considerable progress in antibiotic treatment for trachoma has been made over the last 20 years. The use of sulfonamides, a common cause of allergies, was given up in favour of tetracycline-based ophthalmic ointments, which are still the least expensive treatments today. However in order to be effective, this treatment must be continued twice daily for 6 weeks, and compliance is frequently poor.

The discovery of azithromycin in 1980 and its development 10 years later for the treatment of trachoma revolutionized the management of this disease. An erythromycin derivative, this antibiotic has several advantages: good bioavailability by oral route; an extended half-life; and very good tissue diffusion combined with high intracellular penetration. Its efficacy against trachoma was demonstrated in a single oral dose once per year for 3 years. Over 200 million tablets of this antibiotic have been distributed in 18 countries since 1999 by the NGO "International Trachoma Initiative" (ITI). Azithromycin has thus become the standard of care recommended by WHO, especially since its adverse effects are rare and moderate. However, the misuse and misappropriation of these oral forms could lead to failure of the mass treatment programs. The WHO GET 2020 Alliance thus delivered an international request in 1997 urging the pharmaceutical industry to develop a topical azithromycin treatment of the disease via the conjunctiva and eyelids.

To respond to this request, AZYTER® azithromycin-based eye drops were developed by Thea Laboratories. They provide an alternative for the large scale treatment of trachoma, whether for mass treatment or targeted treatment. Its advantages are its minimal dosage regimen, its duration of treatment (2 instillations per day for 3 days) and its specific ocular usage, which promotes good compliance. Lastly, its efficacy has been shown to be equal to that of oral treatment. In addition, young children and pregnant women could use these eyedrops, which is essential since both of these groups have increased bacterial loads of Chlamydia.
Clinical pharmacological studies compared the pharmacokinetic parameters of different concentrations of azithromycin eye drops (0.5%; 1%; 1.5%) on the ocular surface in a single administration and according to two possible dosage schedules (2 instillations per day for 2 or 3 days). These studies showed that the 1% and 1.5% dosages administered twice daily were able to attain an AUIC (area under the inhibitory curve) that was much greater than the 25-35 limit, which is the normally accepted threshold for Gram positive bacteria, and greater than the limit of 100, the accepted threshold for some strains of Gram negative bacteria.

In addition, 12 hours after the 6th instillation, the dosage regimen of 2 instillations per day for 3 days generated higher concentrations of azithromycin in the tears with AZYTER® 1.5% than with azithromycin 1%, with the plasma levels of azithromycin remaining below the threshold of quantification (Lq=1 ng/ml of plasma).

Lastly, the comparison of the pharmacokinetic profile of AZYTER® to that of oral azithromycin, the standard of care recommended by WHO for trachoma, showed that the twice daily administration of AZYTER® for 3 days enabled the concentrations of azithromycin in the conjunctiva and the tears to be maintained until the 7th day, which was greater than those obtained with oral azithromycin and were compatible with the required MIC (minimum inhibitory concentration).
An international multicentre, randomized, double-blind, parallel-arm phase III trial included 670 children aged 1 to 10 years with active trachoma in Guinea (West Africa) and Pakistan (Southeast Asia).

The objectives of this pivotal study were:

- To demonstrate the efficacy of 2 dosage regimens of AZYTER® 1.5% administered in each eye twice daily for 2 or 3 days compared (non-inferiority) with a reference product, i.e., a single dose of oral azithromycin 20 mg/kg, for the treatment of active trachoma and in the concerned pediatric population (children aged 1-10 years in endemic areas of developing countries).
- To assess the safety of the test product.

Each child received one of the following treatments in double-blind according to the double placebo design:

- AZYTER® twice daily for 2 days;
- AZYTER® twice daily for 3 days;
- Oral azithromycin, single dose of 20 mg/kg.

In addition to the test drugs, preventive measures against reinfection recognized by WHO ("SAFE") were implemented. All children between 1 and 10 years of age in each village were screened for trachoma, and then all the infected children that met the inclusion criteria and had non inclusion criteria were enrolled. The diagnosis of trachoma was made through examination of the upper tarsal conjunctiva using a binocular magnifier and was graded according to the simplified WHO grading system.

A conjunctival swab sample was taken on Day 0, Day 30 and Day 60 from both eyes for microbiological analysis; this was done under double-blind conditions by the French National Reference Centre for Chlamydia (Bordeaux University Hospital, Department of Bacteriology, Virology and Health- France).

The primary endpoint of this study of non-inferiority was clinical recovery, as defined by a grade of TF0 according to the WHO simplified grading system for trachoma (< 5 follicles at least 0.5 mm in diameter on the upper tarsal conjunctiva) in the poorer eye by Day 60. The secondary endpoints were the other clinical evaluation parameters of trachoma, as well as the microbiological analyses.
B 3 - RESULTS

A total sample size of 670 children aged 1 to 10 years was included; 45 were infants from 1 to 2 years, and the mean age was 5.1 years. 96% of patients completed the study, and the treatment compliance was 99%.

The clinical grade of trachoma was TF + TI 0 (i.e., moderate) in around 80% of patients, and TF + TI + (i.e., severe) in 20% of patients.

Primary endpoint

The clinical recovery rates in the 3 treatment groups were the following:
- 93.0% for the AZYTER® 2 days group;
- 96.3% for the AZYTER® 3 days group;
- 96.6% for the oral azithromycin group.

The observed efficacy with AZYTER® treatment of 2 and 3 days is statistically non-inferior to that of oral azithromycin. These results were comparable in all the populations studied.

<table>
<thead>
<tr>
<th>PRIMARY ENDPOINT EVALUATION: PERCENTAGE OF CLINICALLY RECOVERED PATIENTS AT THE END OF THE STUDY (POORER EYE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZYTER® 2 days (n=199)</td>
</tr>
<tr>
<td>185 (93.0%)*</td>
</tr>
</tbody>
</table>

* Statistically non-inferior to oral azithromycin.

Secondary endpoints

The results for the secondary endpoints support the conclusions of the primary endpoint analysis:
- AZYTER® treatment of 2 or 3 days is not inferior to oral azithromycin with regard to recovery of the poorer eye for all measured times.
- The rate of microbiological recovery at Day 60 was greater with AZYTER® treatment of 3 days (71.9%) compared with oral azithromycin (66.7%).

**Microbiological eradication**

<table>
<thead>
<tr>
<th>NUMBER (% OF PATIENTS (MITT GROUP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZYTER® 2 days (n=54)*</td>
</tr>
<tr>
<td>NO</td>
</tr>
<tr>
<td>YES</td>
</tr>
</tbody>
</table>

* The results at Day 30 and Day 60 are missing for 2 patients: 1 in the AZYTER® 3-day group and 1 in the Oral Azithromycin group.

- Only 2.6% of patients presented with clinical recurrence of trachoma, without a significant difference between the treatments.
- The overall efficacy of the treatment evaluated by the investigator was found to be «very satisfactory» or «satisfactory» for over 90% of the children in all the therapeutic groups, without significant difference between the treatments studied.
Azithromycin is as effective against active trachoma in children as the standard reference treatment, single-dose oral azithromycin. Indeed, more than 96% of the children no longer presented any clinical signs of trachoma 2 months after a 3-day treatment. These results demonstrate that trachoma may be treated effectively with the local administration of AZYTER® through a simple dosage regimen that is easy to follow and a short treatment duration (3 days selected for the marketing authorization); it is also compatible with the constraints of large-scale population treatment campaigns.
The health district of Kolofata, near the Nigerian border of the Far North Region of Cameroon, is a very poor sub-Saharan area of 122,057 inhabitants (2010 census), who subsist mainly on agriculture and livestock farming.

Geographically, the district is a sandy plain with several hills in the south. A minority of villages are supplied with drinking water, with most of them having wells that may or may not be hand-dug, converted boreholes with foot pumps, ponds or rivers that are quickly drying up after a short 3-month rainy season. Ninety-five percent of the adult population is illiterate.

The first publication about the estimate of trachoma in Northern Cameroon dates from 1955. Out of 400,000 people examined, 1600 were affected.

With the aim of confirming the hyperendemicity of trachoma in the Kolofata district, an initial assessment was conducted by Ophthalmo Sans Frontière (OSF) in June 2006 in 4 rural health centres: 297 children aged 1 to 10 years were examined with magnifier glasses; 85 (28.6%) presented with signs of active trachoma (TF/TI).

At the request of the Ministry of Health, a first standardized prevalence survey was conducted in December 2006 involving a WHO expert, an ophthalmic epidemiologist, a biologist pharmacist, specialized ophthalmology technicians (TSO), the OSF medical personnel and health personnel from the district led by the medical director of the hospital. This survey concerned 2397 children aged 1 to 10 years old and 1543 women over the age of 14 years, i.e., coverage of 98.9% of children and 97% of women. Equipped with magnifier glasses (2.5x), the investigators everted the upper eyelid of each patient and recorded the clinical status according to the simplified trachoma grading system established by WHO. In the children, the prevalence of follicular trachoma (TF) was thus found to be 21% (95% CI: 17.8 to 24.5) and that of trachomatous inflammation, intense (TI) 5.2% (95% CI: 3.6 to 7.3). In the women, the prevalence of entropion-trichiasis (TT) was assessed at 3.4% (95% CI: 2.4 to 4.7), and that of corneal opacities due to trachoma at 0.9% (95% CI: 0.4 to 1.8).

A 31% prevalence of trachoma was then confirmed during a second standardized survey in 2008 before any treatment: in a population of 2517 children aged 1 to 10 years, there was a 24% prevalence of follicular trachoma (TF) and 7.5% prevalence of trachomatous inflammation, intense (TI).

In accordance with the WHO recommendations, the programme for the elimination of trachoma in the Kolofata district planned a mass treatment campaign each year for 3 years with the aim of treating the 122,000 inhabitants of the district.
As the clinical trials conducted with AZYTER® in Guinea and Pakistan demonstrated the efficacy of AZYTER® in patients with trachoma, the next step of validation requested by WHO was the demonstration of efficacy in a population of endemic trachoma. This could be done as part of the framework of the National Prevention of Blindness Plan and Trachoma Control Programme as described by the Cameroonian Ministry of Health under the coordination of Professor Lucienne Bella-Asumpta, ophthalmology specialist with the Ministry, current President of the Cameroonian Society of Ophthalmology and Department Chief at Yaoundé Hospital. Under the impetus of Pablo Goldschmidt (XV-XX microbiologist who participated in the first clinical trials on AZYTER®), the Cameroonian authorities and WHO (represented by the expert who performed the first prevalence survey in 2006), Pierre Huguet and Thea Laboratories designed a trachoma elimination campaign project in Kolofata, which received approval from the Cameroonian Ministry of Health in February 2008.

The Ministry of Health was responsible for the logistics of transporting the equipment from Yaoundé to Kolofata, as well as all of the field staff: village health workers, nurses and hospital staff from Kolofata. A total of 250 village health workers from the local community were each held responsible for a village or a clustering of 400 to 500 inhabitants. During the 15 days of the treatment campaign, these health workers, supervised by the specialized ophthalmology technicians of OSF, conducted an exhaustive door-to-door census of the district population and administered treatments by visiting each household for 3 consecutive days, morning and evening. All of these activities were coordinated by Dr. Hellen Einterz, Senior Physician of Kolofata Hospital, who particularly ensured the training of health workers in door-to-door methods, census taking and administration of the treatment by personally running a debriefing meeting each evening during the treatment campaign. Her involvement in primary care activities, her personality and her efficacy, which was acknowledged by the field workers, greatly contributed to the proper proceedings of the operations.

The OSF arranged to have nurses available that were specialized in ophthalmology distributed to the 5 OSF centres of Cameroon and especially that of Kolofata. These nurses supervised the distribution of treatments and performed physical examinations and annual prevalence surveys. WHO transferred an expert, Pierre Huguet, who trained the nurses in the clinical assessment of trachoma and sampling. Pablo Goldschmidt (XV-XX hospital) participated in the basic training of the field workers and the logistics and took samples for PCR analysis. Thea Laboratories provided all the necessary equipment, transported from France: 120,000 complete treatments, i.e., 720,000 single doses per annual campaign of AZYTER® specifically manufactured for this purpose, as well as the entire examination equipment (magnifier glasses, swabs, alcohol, etc.) and that needed for the prevalence surveys (collections sheets, pens, etc.).
ELIMINATION OF TRACHOMA WITH AZYTER®: RÉSULTS OF 3 MASS TREATMENT CAMPAIGNS IN THE ENDEMIC AREA OF NORTHERN CAMEROON

THE SAFE STRATEGY WITH AZYTER®

S
(Surgery) Cases of entropion trichiasis were identified during each treatment campaign and regularly during sensitization sessions. They were referred to the hospital and were operated free of charge. The need for surgical intervention was estimated to be 1500 cases. 542 were operated in 2008, 355 in 2009. In 2011, over 50% of the ultimate objective was achieved.

F
(Facial cleanliness) A component of the SAFE strategy, campaigns aiming to improve hygiene and sensitization to facial cleanliness, have been conducted since 2006 through posters and information meetings in the schools and the villages. During the sensitization campaigns of 2008 and 2009, surveys of the population were taken: the faces of children were examined and their cleanliness was assessed. In 2008, 14,121 children were examined, 2082 (14.7%) of whom presented a dirty face. In 2009, out of the 22,964 children examined, 2683 had dirty faces (11.7%) (18). In addition, in November 2009, the supervisors questioned 350 people from the territory (50 per health area). The majority were able to correctly respond to questions regarding what trachoma is, ways of preventing it and why it is better to clean the face with soap and water and not a simple piece of tissue.

E
(Environmental improvement) In 2008, a water accessibility survey in the villages counted that there are 199 equipped wells, 381 traditional wells and 97 boreholes in service. Twenty villages were classified as priorities for aid in the construction or renovation of water supply facilities. In 2008 and 2009, 4 boreholes were drilled by the state of Cameroon and 4 others with the assistance of private funds (Peace Corps – Friends of Kolofata).

Problems related to environmental hygiene, to management of domestic animals and the construction of latrines were discussed in sensitization meetings.

There is still considerable work to be done before the “E” part of the SAFE strategy is attained. According to the WHO recommendations, continuation of the actions relative to “F” and “E” is anticipated until 2013.
Conforming to WHO recommendations (22), the trachoma control programme in the Kolofata health district required a mass treatment campaign each year for three years. The treatment programme was authorized by the Cameroon Public Health Ministry in February 2008. The first campaign began on 23 February 2008 and ended on 10 March 2008; the second campaign was conducted between 5-20 January 2009. It was the same for the third campaign in January 2011.

The target population was the 115,274 residents of the Kolofata health district. (22)

Each of the 250 community health workers was posted to a village or a district of 400 to 500 inhabitants. In the two weeks before the start of the treatment, the community health workers, aided by an experienced community health worker, took an exhaustive door-to-door census of all the residents of the Kolofata health district. The community health workers then administered treatments by visiting the households each morning and each evening for three consecutive days.
The studies

Three descriptive cross-sectional surveys were conducted in the Kolofata health district; the first was done before the treatment in February 2008, the second before the second treatment in January 2009, and the third in January 2010, one year after the second treatment. These studies were done in order to measure the efficacy of the treatment on the prevalence of the active forms of trachoma in the population. The TF and TF/TI forms in children between the ages of 1 and 10 years were used as indicators. The standard WHO protocol was used for the prevalence surveys (23).

Eight nurses from the NGO “Ophtalmo Sans Frontières” (OSF) supervised the treatment campaign.

All the subjects gave their informed consent. As over 90% of the people were illiterate, the informed consent was read to the individuals, and if they agreed to participate, the participant or his/her legal representative placed their fingerprints on the informed consent. Before the start of the study, the National Ethics Committee of Yaoundé approved the protocol of the survey and this method of collecting the consents.

During the first treatment, AZYTER® was administered to 111,340 out of the 115,274 listed persons (96.6% coverage) (19). During the second campaign, 105,802 persons (45,288 adults and 60,514 children; 50,846 men and 54,956 women) received the treatment of 6 doses of Azyter.

In 2008, before any treatment, the prevalence of the active forms (TF + TF/TI) was estimated to be 31.5% (95% CI: 26.4 to 37.5). One year after the mass treatment, this prevalence dropped to 6.3% (95% CI: 4.5 to 8.6). One year after two topical treatments, the prevalence dropped to 3.1% (95% CI: 2.0 to 4.9), i.e., a 90% reduction.

The prevalence of TF in the study sample was estimated at 24% before the treatment (95% CI: 20.7 to 27.5), 5.8% one year after the first treatment (95% CI: 4.1 to 8) and 3.1% one year after the second treatment campaign, i.e., an 87% reduction. The prevalence of TF / TI was estimated at 7.5% before the treatment (95% CI: 5.7 to 10) and disappeared after two annual treatments (0.5% after the 1st treatment and 0% after the second).

The questionnaires concerning the treatment side effects were administered by the community health workers during the daily visits. The several recorded complaints were local and brief side effects (hazy vision or transitory feeling of ocular burning). No serious adverse effects or systemic side effects were reported.

As determined by WHO, the current prevalence of 3.1% indicates that “trachoma as a blinding disease is controlled and eliminated” (TF <5% and TF / TI <0.2%) (9). The fact that TI (factor of severity of the disease) was eliminated after the first treatment is particularly encouraging, since the TI patients are the most likely to have blindness when the disease progresses.
SAFE STRATEGY APPLIED IN FAR NORTH REGION OF CAMEROON WITH AZYTER® (18)

PREVALENCE OF ACTIVE TRACHOMA DURING SUCCESSIVE SURVEYS

- **TF**: Trachomatous inflammation – Follicular
- **TF/TI**: Trachomatous inflammation - Intense (Severe form of the disease)
After three campaigns against trachoma in Kolofata, we learned two major lessons. Firstly, it is through our unity of strength that we will eliminate this disease. In this Northern Cameroon district, nothing would have been possible without the partnership of the Cameroonian Ministry of Health, WHO, Ophtalmo Sans Frontières and Thea Laboratories. Secondly, the experience confirms all the potential held by AZYTER®, from the clinical trials stage: an effective treatment in three days, i.e., a duration that is more compatible with a mass campaign; a formula that reduces the risk of counterfeits; and finally, methods of administration that considerably impede any possibility of misuse. These combined advantages most definitely make AZYTER a complementary contribution, which had been missing, for attaining the goal set by WHO: the elimination of trachoma by 2020.

CONCLUSION
I wish to thank the Cameroonian Ministry of Health and particularly Professor Lucienne Bella Assumpto, who provided the medical and paramedical personnel necessary for the success of these three treatment campaigns and prevalence surveys. I would also like to thank the World Health Organization for its scientific support and the provision of an expert at the beginning of this endeavour. Many thanks to the Minister of Health and the Minister of Justice for their personal involvement, which greatly contributed to the attainment of the goals of elimination. I must also acknowledge the professionalism of Dr. Ellen Einterz without whose help nothing would have been possible, and the assistance from the National XV-XX Hospital by Mr. Pablo Goldschmidt who played an important role in the implementation of this programme. Acknowledgements to the NGO team of Ophthalmos Sans Frontières and its Vice-President Dr. Philippe Bensaid, who performed magnificent field work and operated all the cases of trichiasis that were directed to them. Lastly, thank you to the traditional chiefs of the Kolofata district and the family chiefs for their hospitality and their participation.

HENRI CHIBRET

The photographs reproduced in this document are by Michael JACQUE.
ELIMINATION OF TRACHOMA WITH AZYTER®: RESULTS OF 3 MASS TREATMENT CAMPAIGNS IN THE ENDEMIC AREA OF NORTHERN CAMEROON


14. Comparison of Azithromycin Level in Tears and in Conjunctiva After Repeated instillations (Twice-daily for 1 Day or for 3 Days) of T1225 1.5% Eye Drops or After Single per os Administration of Zithromax (Azithromycin 1g), in 36 healthy volunteers. pilot, Single-Centre, open (Single-masked to Azithromycin Concentration Assessments), Randomised, without Direct individual benefit, parallel Comparison, 2 ocular Dosing Regimens versus per os Administration [3 groups, 12 Subjects in each group]. Clinical study report LT1225 – p14 – 11/02. Laboratoires Théa. Final version dossier AMM, janvier 2006

15. Goldschmidt PL, Chiambaretta F, Garraffo R et al. Tear concentrations of azithromycin (AZM) following a single instillation and a bid dosing regimen for 3 days of T1225 0.5%, 1.0% and 1.5% eye-drops. ARVO. Fort Lauderdale, USA, May 6-10, 2007. 2007; E-Abstract 773/B548.


Local antibacterial treatment of conjunctivitis due to sensitive germs: Purulent bacterial conjunctivitis, trachomatous conjunctivitis due to Chlamydia trachomatis. It is advisable to take into account the official recommendations concerning the appropriate use of antibacterials. "All antibiotic prescriptions have an impact on bacterial resistance. It must be justified." ** According to the criteria of the WHO Alliance for the Global Elimination of Blinding Trachoma by the year 2020