Wiping out TRACHOMA from Nepal

How Nepal eliminated trachoma as a public health problem

World Health Organization
REGIONAL OFFICE FOR South-East Asia

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Acronyms and abbreviations

DDC	District Development Committee
DHO	District Health Office
DHS	Department of Health Services
DPHO	District Public Health Office
DWSS	Department of Water Supply and Sewerage
FCHV	female community health volunteer
HP	health post
ITI	International Trachoma Initiative
MDA	mass drug administration
MoHP	Ministry of Health and Population
NNJS	Nepal Netra Jyoti Sangh
NTD	neglected tropical disease
NTP	National Trachoma Programme
PHC	primary health care centre
SAFE strategy	surgery, antibiotics, facial cleanliness, environmental improvement
SHP	sub-health post
TF	trachomatous inflammation - follicular
TRA	trachoma rapid assessment
TT	trachomatous trichiasis
VDC	village development committee
WASH	water, sanitation and hygiene
WHO	World Health Organization

Foreword

Nepal has taken a momentous leap towards reducing disabilities among its people by eliminating trachoma as a public health problem. A blindness survey undertaken in 1981 highlighted that trachoma was endemic to Nepal, and was recognized as the second leading cause of blindness. A disease prevalent in overcrowded communities with poor hygiene, with transmission further aided by flies, added dimensions to the challenges of underinvestment in both control programmes and research. The barriers seemed insurmountable, but Nepal has overcome this neglected tropical disease in less than four decades.

Trachoma is a disease that breeds in poverty and breeds poverty. What makes Nepal's achievement a beacon of hope for all developing countries is the commitment and ownership by political leaders and health workers, which ensured that resources were adequately provided and deployed so that the goal of eliminating trachoma was kept in focus. By doing so, the Government of Nepal has not only improved the health prospects of its most poor and marginalized but has also made the future brighter by improving their ability to access opportunities for education and employment, setting them free from this incapacitating disease.

The National Trachoma Programme (NTP) was launched in 2002 with the single aim of rolling out SAFE (surgery, antibiotics, facial cleanliness and environmental improvement) interventions to eliminate trachoma from as many as 20 high-risk districts of Nepal. The NTP and Nepal Netra Jyoti Sangh (NNJS) trained thousands of community health volunteers to tackle the disease at all levels and across all endemic districts. Mass drug administration, counselling, referral of patients and sensitization of the community towards healthier hygiene and sanitation practices ensured that the transmission of trachoma was interrupted in Nepal. In collaboration with WHO, Nepal made concerted efforts to meet the high standards of data collection and disease management that were necessary for this remarkable feat. The result was commendable – the trachoma elimination target in all endemic areas was more than amply met and validated by World Health Organization.

Today, Nepal can stand as tall and proud as its highest mountain, knowing that it has achieved the peak of health stewardship in wiping out trachoma from its boundaries. As its people celebrate their bright dreams and visions, I extend my sincerest congratulations to the people and leadership of Nepal on this outstanding success.

Dr Poonam Khetrapal Singh
Regional Director
WHO South-East Asia Region

Sources:

1. Dossier documenting elimination of trachoma as a public health problem submitted by Federal Democratic Republic of Nepal, March 2018
2. National Population and Housing Census 2011 (Population Projection 2011–2031), Government of Nepal National Planning Commission Secretariat Central Bureau of Statistics Kathmandu, Nepal, August 2014 (http://cbs.gov.np/image/data/Population/Population%20projection%202011-2031/PopulationProjection2011-2031.pdf)

Introduction

In a mountain village, a child's cry reverberates through the squalor. The mother hurries over to her baby's side, taking care not to step on the mounds of faeces littering the packed earth outside their living quarters. Swatting away a fly perched on the child's eyelid, she takes her child in her arms.

This poignant scene is a cause for deep concern, since this mother and baby live in a trachoma-endemic district, and every day their lives are threatened by the risk of contracting the bacterial infection that causes trachoma. Trachoma can spread from one family member to another, from other people in the community, or from the hundreds of flies that flit in and out of their living space. What starts out as an itching in the eye, develops into an inflammation that could go on to cause scarring of the upper eyelid and turn it inwards, resulting in the eyelashes scratching and scarring the cornea bit by bit, known as trichiasis. Eventually, there is full and irreversible blindness.

Trachoma does not kill but it produces a lifelong and painful visual impairment from which, in the absence of timely treatment and surgery, return is usually impossible. It thrives in crowded living quarters that lack proper sanitation and adequate water to maintain hygiene standards. In affected communities, the disease is identifiable in preschool-age children. It is communicable and spreads within families, with women having almost twice the risk of going blind from it as men. Once the disease has reached the stage of trachomatous trichiasis, the only recourse available is surgery. Globally, trachoma is responsible for alarming numbers of visually disabled and isolated people.

Significant events in Nepal's fight against trachoma

A neglected tropical disease

Currently identified as the leading infectious cause of blindness worldwide, trachoma thrives in conditions associated with poverty: congested surroundings, scarcity of water and lack of sanitation facilities; the flies that contribute to transmission lay their eggs on human faeces left exposed on the soil. The disease is endemic to many of the poorest communities in Africa, Asia, Central and South America, Australia and the Middle East. An alarming 1.9 million people suffer visual impairment due to trachoma and 3.2 million people require surgery to correct trichiasis. An additional 190 million are still living in trachoma-endemic districts. Due to gross historical underinvestment in both control programmes and research, in relation to its contribution to human suffering, trachoma has been classified as a neglected tropical disease (NTD) by WHO.

The endemicity of trachoma in Nepal was brought to light by a survey conducted in 1981, when it was recognized as the second-leading cause of blindness in the country. After the 1981 blindness survey, trachoma was identified as a public health concern in Nepal. In 1993, WHO adopted the SAFE strategy for the elimination of trachoma and, in 2002, Nepal launched a National Trachoma Programme (NTP) with the single aim of rolling out SAFE interventions to eliminate trachoma from as many as 20 endemic districts.

In 1996, WHO initiated the Alliance for the Global Elimination of Trachoma by the year 2020 (GET2020) to support international efforts to wipe out trachoma using the SAFE strategy.

Key challenges

Nepal is geographically diverse, with mountains to the north and plains to the south, making streamlined development across the entire nation challenging. Poverty and underdevelopment pose significant problems for the 83% of the population that still resides in rural areas.

Almost a quarter of the Nepali people live below the poverty line, with issues such as poor sanitation and hygiene practices,which are conducive to the development of trachoma. Growing food insecurity further heightens their vulnerable health status.

Less than 40% of the population has access to sanitation facilities and means of safe disposal of faeces for children. This is critical, as it provides a breeding ground for the fly vector causing trachoma to thrive. Access to water supplies is also made uneven by the urban–rural divide in Nepal, with only 80% of the rural Nepalese using improved water services.

Overcoming the obstacles

The political: The political leadership of Nepal donned its full fighting gear to collectively wage war on trachoma. The inputs were diverse, ranging from resource acquisition, support for nationwide mapping surveys and vector control efforts to the Ministry of Education developing promotional material to raise awareness about the disease and including a module on trachoma in the school syllabus for grades 1–5.

The geographical: Nepal is home to extreme diversity in its landmass, with mountains and hills to the north and plains towards the south. A large part of the country's population resides in rural areas, often in extreme poverty. The goal to make eye care, sanitation and water accessible to one and all, despite such geographical, economic and educational heterogeneity, has been back-breaking.

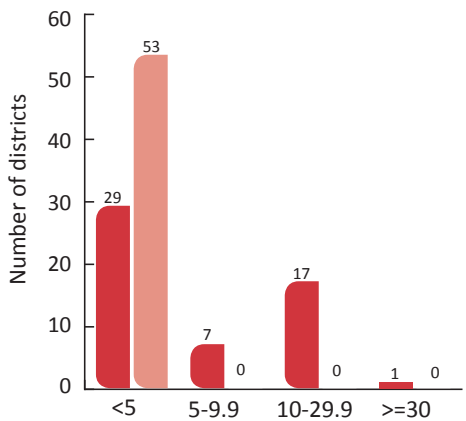
The administrative: Diseases like trachoma, which depend on immediate environmental factors like crowded localities, scarcity of water and sanitation practices, are complex to address. They require not just a health response but a more holistic and coordinated response from all development partners.

The social: The NTP and NNJS joined hands with local district health supervisors to train thousands of community health volunteers in procedures pertaining to antibiotic MDA, counselling, identifying and referring patients as well educating them about healthier hygiene and sanitation practices. Ophthalmologists in Nepal ensured detailed and rigorous training of ophthalmic assistants, followed by refresher training every few years, for the surgery drive of the NTP to proceed smoothly and efficiently.

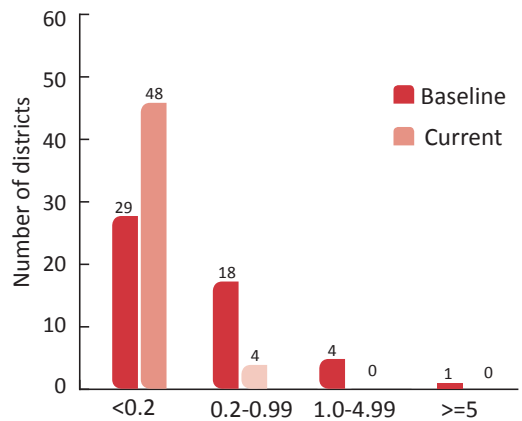
The technical: WHO and the International Trachoma Initiative (ITI) have proved to be invaluable partners, providing technical and financial support to implement the SAFE strategy as part of the NTP. ITI has additionally helped make MDA a success through their stewardship of the Pfizer donation of azithromycin, which was administered to people in 20 endemic districts. RTI International/ENVISION provided the funding and technical support needed to carry out surveys and MDA.

National Trachoma Programme

In 2002, the NTP was launched with the purpose of eliminating blinding trachoma from Nepal by 2017. It was implemented jointly by the NNJS, the Ministry of Health and Population (MoHP) and the Department of Water Supply and Sewerage (DWSS), with support from the ITI and RTI International/ ENVISION. The Programme focused on conducting district-level TRAs throughout the country and implementing the WHO-recommended SAFE strategy within identified endemic districts. Later, in 2005, with the mission of expanding the NTP to all trachoma-endemic districts, the Programme adopted an integrated approach, with NNJS at the helm of the surgical component of the SAFE strategy, MoHP overseeing antibiotic MDA, and water, sanitation and education partners delivering SAFE's "F" and "E" components.



Trachomatous inflammation - follicular (TF) prevalence (%)



Trachomatous trichiasis (TT) prevalence (%)

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Laying the foundation

Commitment

The success of public health initiatives rests on the commitment of the country's leadership to prioritizing and supporting its goals. The MoHP, Government of Nepal, has ensured that a referral system is in place for the people of Nepal to have access to inexpensive treatment. The Apex Body of Eye Health, under which all eye health initiatives fall, has worked consistently with the NNJS to systematically assemble a team of 3000 well-trained staff at 18 eye hospitals throughout the country. Additionally, 85 district eye care centres have been instituted to provide ophthalmological services, treatment for routine ocular disorders and trichiasis surgery to the people. Ten thousand social volunteers were in the field.

Since its launch in 2002, the NTP and its parent organization, the NNJS,have overseen the conduct of trachoma surveys and MDA events carried out as part of the SAFE strategy, making sure that both human and financial resources have been managed expertly. The leadership has also been instrumental in raising general awareness about trachoma among the masses by undertaking educational activities in partnership with the Ministry of Education and promoting environmental improvement activities.

Infrastructure

Nepal has a solid and efficient infrastructure,which is the foundation upon which public health programmes rest. Nepal's Department of Health Services (DHS) houses five regional health directorates across the country. Sixty-two of the 75 districts have their own District Health Office (DHO), complete with a District Hospital and a District Public Health Office (DPHO). Health-related activities in the districts are organized by the DHO via the District Development Committee (DDC). Health development activities include management of district hospitals, primary health care centres (PHCs), health posts (HPs) and sub-health posts (SHP).

The DHS, which falls under the MoHP, carries out preventive and curative health services such as vector control and disease control through the DPHO.

For every 100 000 people there is one PHC, for three to five village development committees (VDCs) there is one HP and for every VDC, there is one SHP. The SHPs are usually the first point of contact between the patient and the facility. Community health volunteers and female volunteers in SHPs provide referrals for treatment in HPs, PHCs and hospitals.

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Partnerships

WHO has been a steady partner of the MoHP of Nepal since the launch of the NTP in 2002, providing the technical and financial support required to tackle the public health problem of trachoma. Exchange of technical expertise and knowledge between WHO collaborating centres and centres of excellence in Nepal have aided smooth decision-making and rolling out of the SAFE strategy.

The ITI has lent constant support to the NTP via funding for MDA at both the district and national levels, and managed Pfizer's donations of azithromycin from 2002 to 2005. RTI International/ENVISION has been forthcoming with financial as well as technical support for the MDA drive and prevalence surveys, while Helen Keller International has provided financial support for "S", "F" and "E" activities.

The Nepalese Government has also kept the Programme afloat by means of partnerships among its different departments, for example, by having the MoHP work with the Ministry of Education to integrate modules on trachoma into the school curriculum for grades 1–5.

RTI INTERNATIONAL

iTi International Trachoma Initiative

Government of Nepal
MINISTRY OF WATER SUPPLY & SANITATION
Department of Water Supply & Sewerage

Intervention

The question that emerged while formulating intervention tactics for trachoma in Nepal was this: **How can a high-quality, accessible public health response be ensured in a country so diverse and with so many developmental challenges?**

The NTP rolled out a combination of intensive surveys and the WHO-recommended SAFE strategy to confront the problem of trachoma in Nepal.

Surveys

In countries like Nepal, where vector control options are limited and an infectious disease can occur without immediate symptoms, it becomes essential to measure the presence of disease in the community, rather than waiting for patients to present to health facilities. Thorough surveys and mapping drives with adequate population coverage are usually the first step in the fight against such a disease.

The first blindness survey conducted in Nepal in 1981 turned up alarming results, with trachoma emerging as the second-leading cause of blindness after cataract. Following this survey, the NNJS launched community-based trachoma control programmes to curb the prevalence of the disease in endemic regions. With the launch of the NTP in 2002, TRAs and prevalence surveys were carried out nationwide to map trachoma in all of Nepal.

Geographical diversity made conducting countrywide mapping a challenge, but the NTP formulated an effective strategy to overcome it. Two approaches for efficient mapping at the district level were used. For districts suspected to be endemic, a TRA was carried out and if active trachoma levels were found to be <10%, no additional mapping was undertaken. If active trachoma levels exceeded 10%, the TRA was followed up by a more formal population-based survey. Between 1996 and 2001, population-based prevalence surveys were implemented in five districts of Nepal. From 2002 to 2011, with the support of the NTP, TRAs were rolled out in 57 districts with the goal of identifying and prioritizing districts for SAFE interventions. In 2012 and 2013, population-based prevalence surveys were conducted in 27 districts.

Mass drug administration

MDA is a globally practised intervention in areas where the prevalence of trachoma is moderate to high. To eliminate trachoma, MDA involved treating residents of entire districts with azithromycin.

Teamwork and exemplary leadership ensured that both the demand and supply sides of the equation were bolstered to maximize the take-up of MDA. Local leaders actively promoted awareness about the drugs being administered,while the Ministry of Education worked with the NTP to develop and distribute promotional and educational materials about the trachoma programme. The NNJS helped in training over 10 000 social volunteers to educate and encourage people to participate in the MDA and together achieve the target of eliminating trachoma.

District health posts were delegated the task of coordinating MDA activities in their districts. As preparation, NTP-trained district public health supervisors trained those in charge of HPs and SHPs on the management of distribution sites, dosages and techniques for recording MDA treatment. They, in turn, passed on this training to female community health volunteers (FCHVs). Distribution teams comprised one HP in-charge, an assistant and two FCHVs.

MDA dates were decided in advance by the DHO, followed by prompt promotion of MDA activities through FM radio and house visits by the FCHVs. Each VDC took nine days for MDA, one for every ward in the VDC. Azithromycin was administered by health workers at a central, pre-advertised point in the community. About 16 000 FCHVs in 20 districts were trained as part of this MDA initiative. When the NTP stopped MDA in 2014, 14.7 million doses of azithromycin had been delivered throughout Nepal with the aim of eliminating trachoma.

Focusing on facial cleanliness

Sometimes, the cleanliness of a child's face can be a herald to her health. To inculcate cleanliness as an essential part of staying trachoma-free, NTP staff focused on bringing about behaviour change in hygiene practices through a series of information, education and communication materials. Posters detailing how trachoma spreads among family members, and charts and handbills detailing precautionary measures against trachoma were made available at all health posts and were used by health workers to educate people. Brochures were developed for the training of FCHVs in MDA and interviews with local health supervisors were routinely aired on radio to reach as many people as possible.

Creating a clean and convenient environment

NTP partnered with the Department of Water Supply and Sewerage (DWSS), Division of Environmental Sanitation, and other water, sanitation and hygiene (WASH) partners to address the issues of water scarcity and lack of access to latrines. The DWSS initiative for total sanitation and making Nepal open defaecation free, focused on behaviour change and provision of access to water and latrine services. This provided a platform for the trachoma elimination effort. From 2002 to 2003, with support from the ITI, the NTP and DWSS constructed more than 7000 latrines in households and 2000 in schools in trachoma-endemic districts.

Surgery

Trachoma affects an individual in various stages: repeated episodes of active trachoma in childhood lead to trachomatous scarring of the conjunctiva. In some people, this progresses to a point at which it causes trachomatous trichiasis, wherein the eyelashes rub against the eyeball. Surgery is the mode of treatment required by those suffering from the extreme discomfort and progressive loss of sight caused by trichiasis.

Ophthalmic assistants were trained by ophthalmologists under the NTP to provide trichiasis surgery in accordance with WHO guidelines. To keep training up to date, refresher training was held every two years. Training was given to approximately 120 district eye health staff for conducting counselling and outreach activities for patients with trichiasis, while an additional 5000 FCHVs were coached in identifying and referring such patients in trachoma-endemic districts.

The NTP has carried out nearly 29 468 TT surgeries in Nepal, with more than 70% of those done between 2003 and 2010 being conducted at eye surgery camps.

Surveillance

Many diseases that could fall under the category of NTDs and some already included under this umbrella lacks a clear elimination goal globally. However, for trachoma, the goals were fixed;reducing the prevalence of active trachoma to <5% in children aged 1–9 years, and of trichiasis to <0.2% in those over 15 years of age. One year after completion of the recommended number of rounds of MDA, impact surveys were carried out in endemic districts using the WHO simplified grading system. Data from 1000 children (aged 1–9 years) and 2000 people (aged over 15 years) per district were collected. Every district had reduced the prevalence of active trachoma to less than 5%, leading to the discontinuation of MDA.

Districts were found to have maintained these low-prevalence figures when surveys were repeated two years later, as part of the surveillance strategy. However, the NTP will continue to monitor and report the incidence of trichiasis in all districts of Nepal, and keep a watchful eye for the re-emergence of active trachoma.

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Validation

The NTP prepared a dossier based on the baseline survey, implementation, impact survey and pre-validation surveillance survey data,along with plans for future vigilance and provision of surgery as required. The dossier included documentation of the conception and evolution of the NTP, key features of the mapping and intervention techniques used and, finally, of the survey results. These served as evidence of Nepal having met the established criteria to validate elimination of trachoma from its endemic districts.

Nepal has eliminated trachoma as a public health problem.

With trachoma eliminated as a public health problem, Nepal has reason to celebrate the disease-free dreams and visions of 29 million of its population. The people's and leadership's commitment to eliminating trachoma from the country has proven that true strength can be found by facing our goals and marching towards them together.

Lessons learnt

Every successfully executed public health initiative leaves behind a set of lessons. So, what did we learn from Nepal's trachoma elimination effort?

● **Leadership is the key driver of success.** From the MoHP to the Ministry of Education, it was the unswerving commitment of all government departments and their leadership that were instrumental in ensuring that no effort was spared in reaching the goal of trachoma elimination.

● **Mobilizing all stakeholders by spreading awareness and education ensures active participation.** Since the factors responsible for the spread of infection were inadequate sanitation and cleanliness, raising awareness about good hygiene practices as well as environmental drivers ensured that the message reached both children and adults in huge numbers. Training of health workers helped them to effectively execute their roles.

● **Vigilance and quality monitoring must be unflagging.** Thorough quality control checks were undertaken at every stage of the Programme, from collection of data through TRAs and pre-validation surveys, to administration of MDA and conduct of surgeries. This ensured that international standards of quality were met and that this pernicious disease could be eliminated and proven to have been eliminated.

Protecting the future

Nepal has eliminated the public health crisis of trachoma. Several of the factors that provide a breeding ground for the disease to spread and thrive are still very much a part of the intrinsic developmental challenges that Nepal has to keep addressing. For trachoma to stay away, changes have to be made at the environmental and resource allocation levels. Protection from the fly vector of trachoma requires appropriate disposal of human faeces. This requires infrastructure, education and behaviour change across the population. In the meantime, regular assessments and surveys, combined with a dedicated effort to raise awareness of the disease, will continue to help ensure that the disease does not return.

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