Prevention of Blindness

Report of the 4th Inter-Country Workshop

Luang Prabang, Lao PDR

February 4-8, 2002

Dept, of Ophthalmology, Juntendo University

WHO Collaborating Centre for PBL, Tokyo
Meeting

Field visit
Health care network hospital

15 APR 2004

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MANILA, PHILIPPINES
Programme of the 4th Inter-country Workshop on Prevention of Blindness

"Phu Xi Hotel", Luangprabang
Lao People’s Democratic Republic
4 to 7 February 2002

Agenda and Programme

The First Day (04/02 Mon)

8:30  Registration

9:00  Opening ceremony
Addressing message
1. Mr. Chansy Phosikham, Governor of Luang Prabang
2. Dr. G. Deodata, WHO Representative to Lao, PDR
3. Prof. Atsushi Kanai, WHO Collaborating Centre for PBL
4. Dr. Ponmek Daraly, HE. Ministry of Health

9:30 – 10:00  Coffee break

10:00 – 11:30  Selection of Workshop Officers
· Chairperson, Co-chairperson and 2 reporters
· Introducing participants

Keynote lecture (30 min for each)
1) Global situation of PBL and Vision 2020   Dr. S. Resnikoff, WHO/Geneva
2) Healthy City Project            Dr. Ogawa, WHO/Manila

11:30 – 12:30  Country presentation (20 min. for each)
“The present situation of blindness prevention, emphasising on ocular infection

Cambodia
Laos
Viet Nam

12:30– 13:00  Lunch
13:30 – 14:30 Country presentation (cont.)

Myanmar
Thailand
Discussion

14:30 – 15:30 Panel discussion (1)
The Perspective of blindness prevention in the sub-region, new challenges, “Strength “and “Weakness” of the national activities

Panelist: Representative from Cambodia, Laos, Thailand, Myanmar and Viet Nam
Coordinator: Dr. K. Konyama (Japan)
Reporter Dr. Patpong G (Thailand)

15:30– 16:00 Coffee break

16:00 – 17:00 Panel discussion continues and conclusions and recommendations

The Second Day (05/02 Tue)

8:30 – 9:30 Special lecture (1) “Ocular management system development”
Prof. S. Ohno, Hokkaido University.

9:30 – 10:00 Special lecture (2) “Recent advance in University management”
Prof. S. Ohno, Hokkaido University

10:00 – 10:30 Coffee break

10:30 – 12:00 Group discussion: Topic one: Ocular infection management in PEC network
· Group A Community and the first level of referral
· Group B Second and tertiary level of referral
· Group C Research and development

12:00 – 13:00 Lunch

13:00 – 14:00 Group discussion continues
14:00 – 15:00  Presentation of group discussion topic one, “Conclusions and recommendations”

15:00 – 15:30  Coffee break

15:30 – 17:00  Panel discussion 2
   Quality assessment of cataract service (60 min)
   Panelist: One representative from Cambodia, Laos, and Viet Nam, Myanmar and Thailand are also invited.
   Dr. R. Pararajasegaram, Dr. K. Konyama
   Coordinator: Prof. Ton Thi Kim Thanh (Viet Nam)
   Reporter Dr Nguyen Xuan Tinh (Viet Nam)

The Third Day (06/02 Wed)

Morning  Field visit
   All participants visit the health care network in Luangprabang province.

Afternoon  Free afternoon for “Discover Luangprabang”.

The Fourth Day (07/02 Thu)

Morning (8:30 – 12:00)  All national delegates will meet NGO representative
   Programme will be prepared by Mr. Peter Renew (CBM):
   All NGOs delegates are welcomed and meet the workshop participants
   Each NGO working in the sub-region presents own ongoing activities in the sub-region.

Afternoon
   13:30 – 14:30  Preparation of conclusions and recommendations
   14:30 – 15:00  Conclusions and recommendations of the workshop
   15:00 – 15:30  Coffee break
   15:30 – 16:00  Closing ceremony
IAPB Meeting

International Agency for the Prevention of Blindness (IAPB) Meeting is scheduled for the three countries in the sub-region of Indochina, Cambodia, Laos and Viet Nam)

Venue: Phu Xi Hotel, Luangprabang, Lao PDR
Date: 8 February 2002

IAPB Officers in the sub-region will prepare agenda. All national and NGO delegates of the 4th Inter-country Workshop are welcome to join the meeting.

Agenda for the IAPB meeting on Friday 8th February in Luangprabang

8:30 – 12:00

Welcome address by the IAPB/WPR chairperson and selection of the session officers.

1) Agenda 1: Ocular Infection management
   Presentation: Cambodia, Laos, and Viet Nam

2) Agenda 2: A glance on the trachoma situation
   Presentation: Cambodia, Laos, and Viet Nam

12:00 – 13:00 Lunch

13:00 – 16:30

1) Agenda 3: Cataract situation and intervention
   Lecture by Dr. Pararajasegaram
   Presentation: Cambodia, Laos, and Vietnam.

2) Subject 2: Situation of refractive errors and service
   Presentation: Cambodia, Laos, and Viet Nam

16:45 – 17:30 Conclusions and recommendations

17:30 Closing address and words of appreciation by the IAPB/WPR chairperson
Acknowledgement

The Organizers of the 4th Inter-country workshop in Luang Prabang Lao PDR wishes to express our deep gratitude to the Ministry of Health Ophthalmology Centre, the Government of Luang Prabang and the National sub-committee for Prevention of Blindness of their supports in hosting the Workshop. Especially, we much appreciate Dr. Vithoune Visonnavong, Director of Ophthalmology Centre and his staffs for the remarkably work they did in organizing and making the Work-shop a success.

To WHO Head quarter in Geneva, Collaborating Centre Juntendo University Tokyo, Japan, the WHO Western Pacific Regional Office and WHO Lao PDR office for supporting the Workshop.

Unfortunately, this Workshop was Last for Prof. Kanai as you may know he would be retired in March 2002.

To all participants and representatives of non-governmental organizations, for their contributions in making the Workshop a success.

Thank you.
The 4th Inter-Country Workshop on Prevention of Blindness
In Luang Prabang

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The Report of the Forth Inter-country Workshop on Prevention of Blindness
Luangprabang, Lao PDR, from 4 to 7 February 2002

Exclusive Summary

Tokyo centre initiated the three countries in Indochina subregion to meet at a two-year interval since 1995. The first meeting conducted at Vientiane 1995. Then the second went to Phnom Penh in 1998, and Hanoi 2000. The first of the second round the venue returned to Lao PDR again. The meeting took place in Luangprabang, its old capital, Luangprabang from 4 to 7 February 2002. The Tokyo centre supported all travels and local costs. The very purpose of the meeting is that providing those who are working at operational level of these countries to expose each other. That might facilitate closer friendship personally. Also it provides exchanging and sharing their experiences in blindness prevention. Usually this level is hardly to go out of country even the neighbouring countries. This time Myanmar was first time invited as observers. There were two ophthalmologists attended the workshop from the National Programmes for Trachoma Control and Prevention of blindness.

As a traditional, the last day of the workshop it programmed a special session that all international NGOs working in the subregion are invited and to meet with the national delegates.

The workshop also provided an opportunity that a subregional assembly of IAPB to follow immediately after the workshop. Its report is also attached.

Objectives of the workshop were:

General objectives:

To assess the past and the present activities of the National Programmes for the Prevention of Blindness in Cambodia, Laos and Viet Nam in order to accelerate farther progress in the future with special attention to Vision 2020 initiative. The delegates will exchange their new experiences and strengthen further co-operation among them.

Special review and discussions were centred on the following areas:

1) Review the present situation of ocular infection (trachoma is excluded) and discuss development of its control at various levels of eye care facilities.
2) Manpower development covering ophthalmologists and mid-level personnel in eye care.
3) Cataract services, its costs and the sustainable future
4) Sub-regional mutual collaboration in other areas.

In completing the report of this workshop, Tokyo centre would like express deep appreciation to the Ministry of health, Government of Lao People’s Democratic Republic and the entire national who devoted for the success of the workshop and their ward hospital to all delegates.

At the end of the workshop all participants concluded to request generosity from Tokyo centre that the workshop would continue as a means of promoting blindness prevention in the subregion.
Organiser and Administration:

Chief organiser:
WHO Regional Office for the Western Pacific
Ministry of Health, Lao PDR
WHO Collaboration Centre for Prevention of Blindness, Tokyo
Ophthalmic Care Centre, Vientiane

Secretariat:
Tokyo Collaborating Centre for Prevention of Blindness
Institute of Ophthalmology, Hanoi
Institute of Public Health Ophthalmology, Nakhon Ratchasima

Venue: To be announced.

Time: 4 – 8 February 2002
(8 February will have special sessions for "IAPB WPR subregional meeting for Cambodia, Laos, and Viet Nam)."

Participants:

National delegates are invited from Cambodia, Laos, and Viet Nam each five ophthalmologists and from Ministry of Health or health administrators, Ophthalmic Nurses. All must be those who now involve in prevention of blindness activities. In total 15 participants.

Five observers are invited from Myanmar and Thailand comprise of ophthalmologists and health administrators, and Ophthalmic Nurses.

Additional participants are encouraged from Laos at own expenses but not more that ten selected by Ophthalmic Care Centre, Vientiane.

Expected outcome:

It is expected that the workshop will come out with a concrete subregional scheme enhancing the developing, collaborating in the following areas of blindness prevention and eye health prevention and promotion. Especially this will have Myanmar for the first time to join the workshop.

1. Enforced sub-regional moves on prevention of blindness.
2. Strengthening TCDC in the sub-region, regarding
   - Manpower development
   - Refraction service development
3. Ocular infections control system development
   - Plan of co-operations from NGOs.
Conclusions and Recommendations:

The Fourth Inter-country Workshop on Prevention of Blindness was conducted at Luang Prabang, Lao PDR from 4 to 7 February 2002. Participants included national delegates from three countries in the Indochina sub-region of the WHO Region of the Western Pacific. In addition Thailand and Myanmar were invited and participated as observers. In total 25 ophthalmologists, five from each country were at the meeting.

The workshop also invited international NGOs working in the sub-region and thus provided an opportunity for INGO representatives to meet with their counterparts at the national operational level. The key themes selected for the meeting were:

- The present situation of ocular infections and strengthening or development of control systems in the national programmes for the prevention of blindness
- The cataract programmes with particular emphasis on quality of surgical outcome.

Since the outset these workshops had been aimed at the programme managers, who are ophthalmologists and actively involved in blindness prevention and providing eye care at servicing level, to come together. Such past workshops which facilitated exchanging experiences have proved a highly beneficial for mutual understanding and friendship, which is a starting point for TCDC to be built at the operational level. Through such meetings the areas of cooperation could be first identified. The results of contact made and views exchanged result in conclusions and recommendations that could be taken to their respective national policy/strategy making level. It is also provided useful information to the group of international NGOs working in the sub-region.

1. Refraction system development

   The third inter-country workshop which met at Hanoi in 1999, recommended the development of refraction systems as a joint efforts between Institutions in the Region. Reports presented at this workshop showed that there was substantial progress in this regards in all countries.

   The Hanoi Institute of Ophthalmology and Korat Regional Hospital both had refraction clinics. These plan to start their training roles soon. It also includes TCDC for the neighbouring countries. To that end the sub-regional cooperation and national efforts should continue. The development should be hastened and widened to initiate new action elements. Such components such as eye care for children, especially amblyopia and strabismus services can follow provided there was a strong refraction service base.

2. Ocular infection management

   Ocular infections have remained a common ocular condition causing various problems. It may lead to a serious outcome like corneal blindness and destruction of the whole eyeball. Its current management in participating countries, in general, needs updated knowledge and technology, not only in ophthalmology, but also in microbiology, immunology and pharmacology.

   However, all participants recognized that primary prevention is the best strategy and must be initiated at community level. Hence, PEC must be reviewed and strengthened to meet this goal.

   All countries also concluded that their laboratory facilities must be upgraded to cope with wide spectrum of causative agents.
The participants worked out together a plan of action for an updated system of ocular infection management that could be incorporated at the various levels of eye facilities. These are shown in detail in the attached matrices.

For such a new development the need to develop and or revise surveillance systems was emphasized. This could cope to study trends over time. Existing eye care information system must be revised if necessary to include new indicators concerning ocular infection.

Secondary prevention will require laboratory support of varying complexity at all levels. That will ensure better treatment and outcomes. However, appropriate technology must be at the core of the new scheme. Availability of minimum set of relevant anti-microbiological drugs must be assured after reviewing the current situation.

To facilitate all the above it would need the presence of the suitably trained mid-level eye care personnel

Re Training would be necessary for all non-ophthalmic medical and non-medical health personnel. Public education must also be planned and implemented.

3. Cataract programme
In most countries cataract intervention programmes seem to have made substantial progress in term of surgical volume. However, further efforts must be made so that output can meet annual requirements. In addition the quality aspect needs a standardized assessment method for the sub-region.

Programme sustainability is a remaining issue and cost sharing should be given more attention in all countries. Cataract service therefore, must be made to be self-supporting, yet the best possible quality is assured within available resources. Regional and national efforts should give more awareness to this point.

4. Importance of MLP in eye care
All countries accepted that MLP in eye care is essential for the success of blindness prevention. This time it was reiterated that laboratory strengthening for eye infection management need their presence in laboratory work.

Therefore, the development of these personnel in sufficient numbers is a high priority area in blindness prevention. TCDC in this area must be initiated.

5. Workshop and the support from collaborating centre
The participants appreciated the role and support given by the WHO Collaborating Centre to this Workshop.

The organizers and participants felt justified that these workshops were really action oriented as evidenced by the follow up actions and achievements following the last workshop in Hanoi which recommended that Hanoi and Korat institutes would start refraction services.
It was reported this time that now both have implemented this recommendation and the training programmes will start soon. In Lao PDR as well training at the provincial eye units had been completed.

It is expected that the recommendation made at this meeting in relation to the prevention and management of ocular infections will be implemented in individual countries and reports will come in the next workshop. This would be the justification for requesting the Tokyo centre for the support to the next workshop.

◆ World Health Organization/WHO Collaborating Centres

WHO’s initiative in the past had made individual countries to systematically begin the national programmes.

The participants noted with appreciation the technical assistance provided by WHO (Global, Regional and National levels), and by the WHO Collaborating Centres to the participating countries in programme development for prevention of blindness.

It was urged that this be further enhanced through providing technical guidelines, training material, assessment and monitoring outlines and assistance with relevant research studies.

◆ International Non-Governmental Organization

The INGOs play an important complementary role in programme activities in the participating countries, assisting governmental efforts. All participants appreciate the continuing support of NGOs for the progress of the national programmes. Moreover, it seems that the workshop provides a useful opportunity for NGOs to access the real situation in individual countries concerning relevant action plans based on the country needs. Collaboration of NGOs must be made to meet the real need. For this reason their presence in the workshop is mutually beneficial.

The participants stressed the need for closer cooperation and better coordination at the national level, among the various INGOs, on the one hand, and with the National authorities and with WHO on the other, to ensure the optimal utilization of resources, through need based planning and implementation.
# List of participants, The 4th Inter-Country Workshop for PBL

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4-8 February 2002
Luangprabang
Distinguish Excellency Mr. Dr Ponemek DARALOY, Minister of Public Health
Respect to local and foreign guests.

Today, the people of Luangprabang are very pleased and it’s a great honor that Luangprabang was chosen to be the site of the fourth Inter-Country Workshop on Prevention of Blindness.

In this significance occasion, I am on behalf of local authorities and people in the whole province would express our warm hospitality welcome to excellency Mr. Dr, Ponemek DARALOY, Minister of Public Health that on behalf of the government attending this Workshop and also I would express my welcome to local and foreign participants, ladies and gentlemen who attend today’s Workshop.

Dear guests,
Luangprabang has been established, preserved and developed over 1200 years, it’s abundant of famous ruins that shows to the civilization of culture and nearly fine arts and handwork of our ancestors, it’s the town of beauty scenery on cultural and natural so it was named the World Heritage Town on its reputation by UNESCO at the beginning of 1998.

Other hand, Luangprabang is the central northern provinces and being the Medical center of the northern part of Laos, so it’s condition that facilitate for the treatment services to rescue the people’s lives in the northern region.

Dear guests,
As you all aware the prevention of blindness is very important because eye is the most important organ in the human structure, in case of careless of prevention process means the leading organ is blind it’s also means that life is not perfect and in the darkness forever.

I believe that all the participants to the workshop on prevention of blindness take your ability discover the prevention and treatment process of the eyes of Laotain, specifically and also the global citizen in general vies.
On this fine occasion I would like to express my sincere thanks to WHO collaborating Centre, Juntendo University, Japan for your support this workshop in Luangprabang province.

Last but not lease. I wish Excellency Mr. Dr, Ponemek DARALOY, Public Health Minister having good health and prosperity.

Wish all local and foreign participants good health and prosperity.
Wish the fourth Inter-Country Workshop on Prevention of Blindness that organized in Luangprabang Province having fruitful success

Thank you
WHO Opening remarks Inter-Country Workshop for the Prevention of Blindness and the "Control of Ocular Infections", Luangprabang, Lao PDR

Your Excellency Dr. Ponemek Dalaloy, Ministry for Health,
Your Excellency, Governor of Luangprabang,
WHO Tokyo Collaborating Centre for the Prevention of Blindness
WHO Colleagues from Geneva and Manila
Representatives from NGOs
Dr. Vithoune, Director of the Ophthalmological Services in Lao PDR,
Ladies and Gentlemen and Friends,

It is a real pleasure for me to attend this very important Inter-Country Workshop on eye care.

First of all I wish to thank the govern or of Luangprabang for hosting the meeting in this World Heritage beautiful city, and his excellency Dr. Ponemek Dalaloy for his presence with us, today, which underlines the importance of the meeting itself.

I would like to express the WHO's appreciation to the Tokyo Collaborating Centre for Prevention of Blindness for organizing and financially supporting the meeting and, of course, my congratulation also to the MOH for all the local arrangements and for the agreement tot have the meeting in Laos.

I would also like to welcome all the foreign participants from Cambodia and Viet Nam, the observers from Thailand and Myanmar, the representatives from various NGOs and all the other participants.

During the last seven years there have been already 3 meetings of this nature. This is therefore the 4th one.

The first meeting took place in 1995 in Vientiane.
The second was held in Phnom Penh in 1998,
The third in Viet Nam, so it is now time to return to Laos once again....

As you may know, each time the workshop deals with a specific issue related to eyes, to eye sight and to prevention of blindness.
The last meeting dealt with refraction problems and provided, to all countries concerned, indications on how to establish or improve refraction services for the population.

This year the major topic of discussion will be on "how to prevent, control and treat ocular infections".

Somebody, who is not working in this specific field, might be wondering why so much attention paid to eyes, when there are so may other killing diseases to deal with.

Are the eyes and their problems really such a priority?

I am sure I am now talking to the converted, but I would just like to respond to those people, to keep their eyes closed for one day only and try to go around or to do their normal activities.

In other words we often take our vision for granted and realize the importance of our eye-sight only when we do not have it anymore or when we start getting blind.

The vision is definitely the most important of our senses. We can easily survive without the feeling of smell, or the taste of the food we eat, or the feeling of touch, but the life of blind person is really miserable for many aspects.

Preserving the vision and treating all causes which might lead to blindness or to vision impairment, are therefore of paramount importance for all people.

We thank the Government of Japan for the assistance in eye care infrastructure development in strategic provinces and we are also grateful to many NGOs, for the logistic support they provided.

Eye care in Laos is the result of coordinated efforts from many sides. In this connection I am glad to inform the participants that the MOH, with the support of WHO, the financial assistance of the Government of Korea and the technical support of the Tokyo Collaborating Centre, established in 1996, a large programme for cataract operations throughout Laos.

In the last 4 years there have been more than 8,000blinding cataract people operated, and
there is now the capacity to carry out the operation in remote areas, giving back the vision to more than 3,000 people every year.

The recent trainings on refraction, established as a result of the last meeting in Hanoi and Korat, further improved the quality of eye care and services.

It is now hoped that all the problems related to eye infection will be dealt with the most appropriate way in each country here represented, as a result of this meeting.

It is very important to look at the practical aspects, required to improve the eye care, and to analyze the constraints and problems to be solved in order to establish effective and high quality services.

In this connection it will be very useful to review the operational progress of various national programmes, to hear from you about the difficulties encountered, and to propose together practical and feasible solutions for the problems identified.

In future it will be essential to look for alliances and coordinate eye services with other health programmes.

For instance, in the area of eye infection, it will be necessary to strengthen and improve the laboratory and microbiology services for better identification of the cause of infection.

Equally important is the coordination with the pharmaceutical departments, in order to obtain the most appropriate drugs for specific infections.

Other important elements of the programme include:
1. The primary health care services, for the expansion of primary eye care at peripheral levels,
2. The training required to enable health staff to deal competently with eye problems and the
3. Close cooperation with the reproductive health services to eliminate ophtalmia neonatorum, still affecting many newborns, even in urban areas.

The importance of clean water and hygienic practices for the prevention of trachoma and other infections is well known to everybody and need therefore to cooperate with water
supply and sanitation programmes as well.

I hope that each programme manager will be able to establish alliances and closely cooperate with all different departments and sectors involved for better eye care.

One of the main purposes of inviting to this meeting observers and many NGOs, is exactly to foster mutual cooperation, to encourage sharing of information and experiences, to establish coordinated programmes and, especially, to promote Technical Cooperation among Developing Countries.

We have to learn from each other and put together our knowledge in order to find the best solution to prevent all possible cases of blindness or treat on time, and in the most appropriate way, all eye diseases.

I wish therefore to all participants the very best for a productive discussion for a useful sharing of experiences and for learning from each other the best way to avoid or treat all eye infections.

Thank you very much.
The 4th Inter-Country workshop on Prevention of Blindness
at Opening Ceremony
Atsushi Kanai, M.D.
Professor and Director, WHO Collaborating Centre for PBL, Tokyo

His excellency Dr. Ponmek Daraloy, Ministry of Public Health, Lao PDR
Mr. Chansy Phosikham, Governor, Luangprabang province
Dr. Vongehan Phomsavat, vice governor, Luangprabang province
Dr. Sommonc Phounsavathm Head of Curative department,
Dr. Giovanni Deodato, WHO Representative to Lao PDR
Dr. Serge Resnikoff, WHO Geneva
Dr. Hisashi Ogawa, WHO Western Pacific Region
Distinguished guests, Dear Colleagues, ladies and gentlemen of Blindness in the Western Pacific Region, I would like to address you at this opening ceremony.

It is my great pleasure to open the 4th Inter-Country Workshop on prevention of blindness in this Luangprabang, in 4days from today. The participants came from four countries namely from Cambodia, Lao PDR, Viet Nam and Thailand.

Tokyo Centre initiated this Workshop for the first time in Vientiane, Laos, October 1995, then we held it every 2years, second time was in Cambodia in 1998, last time was in Hanoi, Viet Nam, 2000. We also have generous cooperation from the WHO headquarter, Geneva, WHO Western Pacific Region office and Ministry of Public Health Thailand, who is making successes in national blindness prevention programme since first time. In addition, this time we invited new participant of Myanmar. The purposes of this Workshop are to exchange the experiences of each national programme for Prevention of Blindness and to plan for the further mutual cooperation. We had focused on Cataract Intervention in this programme in the past, now we can see clearly that it is going well and contribution of people’s quality of vision. In the last Workshop in Hanoi, we could the plan of refraction service development.

I do hope that you may be able to discuss the important problems of ocular infections of each country in the present situation.

On behalf of Tokyo Centre, I appreciate very much to Ophthalmic Care Centre, Ministry of Public Health, and the Government of Lao PDR for hosting to this workshop and also to
WHO for generous supports. We wish very success of the Workshop as well as last three meeting.

Finally, I hope all of you would enjoy beautiful landscape with an old capital Luangprabang, where is one of the World Heritages.

Thank you
Opening addressing by his Excellency Minister of Health
Dr. PoneMek Daraloy, Ministry of Health, Lao. PDR

On this occasion the WHO Inter-country Workshop on Prevention of Blindness taking place in Luangprabang, on behalf of Ministry of Health, I extend my hearty welcome to all of you. This is the fourth time that the ophthalmologists and health administrators in prevention of blindness from Cambodia, Laos, Vietnam, Thailand and Myanmar are together and joined each other since they were counterpart for a long time.

This Workshop is prepared by WHO Collaborating Centre, Tokyo and Institute of Public Health Ophthalmology, Nakhorn Ratchasima Regional Hospital, Thailand played very secretariat role. Funded by Tokyo Centre and WHO Regional Office for the Western Pacific. The objectives are to exchange experiences in the past in the field of blindness prevention in five countries and discuss cooperation among all participating countries, International Non-Governmental Organisation are invited to share part of the Workshop for presenting the mission.

Blindness especially ocular infection in the community has been and still remains one of serious health threats in Lao PDR. This is the same issues in our neighboring countries. National efforts therefore, have to further go for prevention and control. It has been no more visually impaired but a problem of health system included in general health system of the country. They should be as follow: every one can enjoy the good and highest status of eye health.

However, we are proud of all of you for your success in the study progress in the past. The national program for the prevention of blindness based on primary health care proves good and effective outcomes. Even ocular infection has been successfully implemented within the framework of secondary health care.

Taking the opportunity, on behalf of the ministry of Health and the people of Lao PDR, I would like to express deep thanks to counterparts in the neighboring countries who gave us energetic and closed cooperation. To all of us, blindness, however, challenges us with the different dimensions. Also my thanks and best regards to all of the international organizations. Governmental and non-organizations, which have extended to us various co-operations. We determine that ourselves must firstly tackle the challenges. The actions
must be appropriate and self sustained by our own. To that reason the Ministry of Health will continue to consider as a highest priority of eye health of people. Of anywise, I hope that you are all ready to discuss on mutual collaboration with the spirit of Technical Cooperation between Developing Countries (TCDC).

Eye care in this country enjoys high priority in health services. We do believe further progress by own efforts. However, acceleration could be assured by TCDC among the neighbors and NGOs supports, we hope this opportunity would provide us more technical exchange and cooperation plans in the future.

Once again, I welcome you all and expect from every successful workshop. I do hope all of you will enjoy you stay in Luangprabang, World Heritage city Lao PDR.
The Global Situation of the Prevention of Blindness

VISION 2020
THE RIGHT TO SIGHT

S. Resnikoff MD, PhD
World Health Organization
Geneva

IVth Intercountry Workshop
Luang Prabang, Lao PDR, 4 February 2002

Present situation

Present estimation:
- 45 million people blind
- 135 million visually disabled

< 0.6/18 Blind
0.3 - 0.6 Low
< 0.3 - 0.05

ICD - 10
Best corrected VA

Global Distribution of Blindness by Cause

Macular degeneration
Diabetic retinopathy
Refraction errors (uncorrected)
Glaucoma
Trauma
0.1%
Present situation

80% of blindness is avoidable

preventable or curable

Present situation

However, good quality eye care is:
- not always available (geographical barriers)
- not always accessible (socio-economic barriers)

Cataract

Long-term outcome of cataract surgery from selected population-based studies in Asia

Presenting Post Op. Visual Acuity ≥ 6/18 (0.3)

Uncorrected Ref. Err
- ICCE / No Glasses
- ECCE / Intraol. IOL
Percentage of IOL implantation

Trachoma

Still the main global cause of preventable blindness

Estimates:
- 146 million persons with active disease
- 10 million trichiasis
- 6 million severely visually impaired

A social disease, linked to poverty

Geographical distribution

Childhood blindness

Childhood blindness

Present situation:
- 1.5 million blind children in the world
  - Asia: 1 million
  - Africa: 0.3 million
- 5 million visually disabled

Causes:
- vary from place to place change over time according to socio-economic development
Childhood blindness

Everywhere: congenital cataract / glaucoma
hereditary retinal diseases

Onchocerciasis

Onchocerciasis control programmes

- endemic in 57 countries (50 in Africa)
- 18 million infected by 0.1 million (60 M at risk)
- 25 million treated in 2000
  - Mectizan®
  - partnership +
  - countries
  - WHO & WB
  - NGOs

Mectizan® Treatment Coverage (2000)

APOC Countries

NGO Supported Treatment with Mectizan® within the APOC, OCP and OEPA Partnerships

RefRACTIVE ERRORS AND LOW VISION
Refractive Errors and Low Vision

- Globally:
  - huge number of uncorrected significant refractive errors
    - under-estimated for a long time
    - mainly in developing countries
    - but also in industrialized countries
    - 1/3 of low vision cases due to uncorrected refractive errors
  - low vision care services
    - non-existing in most of the countries
    - or fragmented and patchy

What we know

- Global trends over next 20 years:
  1. global population growth
     from 6 billion people to 8 billion by 2020

Future projections

- Global trends over next 20 years:
  1. global population growth
  2. global population ageing
     from 1 billion aged over 45 to 2 billion by 2020

Global population ageing

- Global trends over next 20 years:
  1. global population growth
  2. global population ageing
  3. reduction of governmental support for blindness prevention
     economic recession and competing demands
Scenario for the future:

1. Because of:
   - population increase and ageing
   - and present weakness of eye care delivery

   blindness will continue to increase

   ...unless more aggressive intervention is taken... and despite obvious progresses

General objective

1. Building a comprehensive eye care system
   - integrated into existing health services
   - providing the best technology that can be afforded

2. In order to make high quality eye care
   - accessible
   - affordable
   to all those in need

Conclusion: the Right to Sight

1. Vision 2020:
   - a very ambitious, yet realistic venture
   - not a new organization or agency
   - a unique opportunity to work together, more efficiently, on a common agenda

   Vision 2020 is a partnership at the global, regional and particularly at the country level

Thank You!
Healthy Cities programme in the Western Pacific Region

Hisashi Ogawa
Regional Adviser in Environmental Health
Western Pacific Region
World Health Organization

Urbanization: The Global Picture (1)
Increasing global pop: 1950 2.5 Billion
1970 3.7 Billion
1995 5.7 Billion
2000 6.8 Billion

1950
1995

Urbanization: The Global Picture (2)

• 3.3 of the current urban population, about 1.6 billion people, are in developing countries.
• Of these, 600 million, or about 37%, live in severe, life-threatening environments.

Urbanization: The Regional Picture

Urban Health Challenges (1)
• Inequity in access to and quality of health services
• Insufficient and inadequate housing and urban infrastructure leading to unhygienic conditions
Urban Health Challenges (2)

- Unsafe workplaces located within urban cities of developing countries contribute to:
  - Poor health and unsafe conditions for workers
  - Environmental pollution
- Worsening air quality
  - Air pollution a major problem in many large cities in the Western Pacific
- Increased traffic
  - Contributes to noise and accidents

Urban Health Challenges (3)

- Unhealthy lifestyles
  - Diet habit: obesity vs. nutritional deficiencies
  - Increasing tobacco and substance use
  - Lack of physical exercise

Solving Urban Health Problems

- Need to address “determinants of health” (i.e., physical and social environments that affect health)
- Controlling physical and social environments is not in the domain of the health sector
- Need for coordination and collaboration with other sectors (e.g., housing, transport, trade, industry, labour, etc.) to provide “supportive physical and social environments for health”
- Also, involvement of the community and mobilization of their resources
- Promotion of healthy lifestyles – Individuals are responsible for own health

The Healthy Cities Initiative (1)

- Healthy Cities is an intersectoral approach with community participation to addressing physical and social determinants of health in the city
- Cities identify their priority health problems and feasible solutions.
- ~180 cities in the Western Pacific now implementing Healthy Cities projects

The Healthy Cities Initiative (2)

- Healthy Cities projects focus on special settings
- 1996 - 5 healthy cities projects in the region
- In 2001, about 100 healthy cities projects on WHO database
  (www.wpro.who.int)

Keys to Success

- Political will/support is needed for sustainable efforts – Strong political leadership
- Citizens’ participation essential, leading to a popular movement – Including the private sector businesses
- Local governments and departments coordinate to provide supportive mechanisms and services
Country Report on
The Progress of Blindness Prevention and Ocular Infection in Cambodia
(Sub-Committee for the Prevention of Blindness)

Introduction:

Cambodia occupies a territory of 181035 square kilometers. It located in the southwestern part of Indochina, boundary by Thailand, Laos, Vietnam and the gulf of Thailand in the Indochina sea.

Cambodian culture similar to other countries in Indochina and still maintain its culture heritages, 95% are Buddhism and other are Christian and Islamic.

The census conducted in 1998 show 11.87 millions people and 85% living in rural area. Majority of them are farmers and have agriculture skill.

Health Care system in Cambodia:

National health system based on an equitable geographic access to basic health and referral system for population in order to optimize the allocation of scare of health resource.

A Primary health care strategy, which is base on the development of district health system is being implemented.

At the provincial level will be result in a 2 system of referral hospital that serving about 200,000 people and each health center serving about 9000 to 10,000 population.

As the result of this reform policy, in the whole country there are:
- 929 health centers
- 67 referral hospitals
- 73 operational district
- 7 National hospital

Blindness in Cambodia:

Cambodia is a country where blindness remains one of the major health and social problem, because of long turmoil war and inadequate of eye care personnel.

There is no national survey on blindness have been conducted in Cambodia, but the two different survey have been conducted in Kandal province and Battambang province estimated the prevalence of blindness approximate 1.2% and the major cause of blindness are: cataract, uncorrected refractive error, glaucoma and corneal scare and pterygium.

Eye Care System In Cambodia:

All Eye unit in the provinces has supported by government and non government organization and the eye care coverage has been increased, but service delivery in
Cambodia are still not meet the basic need of population, because lack of medical infrastructure, qualified personal and material facility. There are 3 level of eye care in Cambodia: tertiary, secondary and primary level. The secondary and primary level are in operational district that coverage about 100,000 population.

- Tertiary level is not yet to developed as in most other developing country Preah Ang Doung hospital one of the national hospital will be developed to national eye center for tertiary level in Cambodia and it also the office of national subcommittee for blindness prevention of Cambodia.
- Secondary level has change a lot after general election in Cambodia 1993. The number eye unit has been increased from 4 eye unit in 1993 to 15 eye unit in 2001. The coverage of eye care delivery is almost complete in Cambodia except for the province that infrastructure is difficult to access, but eye camp in these area have been done.
- Primary level: Primary eye care are integrated into primary health care. The training program of primary eye care have been done in province has eye unit to provided the knowledge to the health center staff to perform primary care in their communities.

**The Progress of Blindness Prevention**
*(Five years after the Implementation of the First Five Year Plan of Action)*

The blindness prevention programme in Cambodia has started since 1995 following the development of the Master Plan which aims to provide basic eye care service in each region of Cambodia and to reduce blindness prevalence to less 0.5 % by the year 2005 and First Five Year Plan of Action (1995 – 2000). The First Five Year Plan of Action had finished with steadily progress noted, thanks to the well coordinated among the national, international organizations and International NGOs.

The Second Five Year Plan of Action has been developed to support the new global initiatives of the VISION 2020 – The Right to Sight. Top priorities for the second phase implementation are:
- Human resource development
- Disease control
- Infrastructure and Appropriate technology
- Sustainability of Eye Care Development

These top priorities have been recommended following the National Workshop VISION 2020 and Partnership for National Eye Care Programme in Cambodia, held in Phnom Penh from 12 to 15 December, 2000.
The Progress of Blindness Prevention

A - Human Resource/ Manpower :

<table>
<thead>
<tr>
<th>Eye Care Professionals</th>
<th>1995</th>
<th>1998</th>
<th>2001</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ophthalmologist</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Eye Doctor</td>
<td>30</td>
<td>35</td>
<td>32</td>
<td>34</td>
</tr>
<tr>
<td>Basic Eye Doctor</td>
<td>30</td>
<td>35</td>
<td>32</td>
<td>34</td>
</tr>
<tr>
<td>Basic Eye Nurse</td>
<td>22</td>
<td>47</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Optometry Technician</td>
<td>8</td>
<td>14</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Ophthalmic Assistant</td>
<td>18</td>
<td></td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>Primary Eye Care Worker/ province</td>
<td>3pro</td>
<td>9 pro</td>
<td>20 pro</td>
<td></td>
</tr>
</tbody>
</table>

B - Disease Control :

Cataract :

Cataract accounts for 65 % of the main causes of blindness and 75 % of low vision. Current estimates show the backlog cataract is 80,000 with the annual incidence of over 19,500.

The number of cataract operation performed in Cambodia has been increased

<table>
<thead>
<tr>
<th>Year</th>
<th>1992</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cataract Operation</td>
<td>500</td>
<td>3500</td>
<td>5500</td>
<td>6000</td>
<td>6735</td>
</tr>
<tr>
<td>Cataract Surgical Rate</td>
<td>50</td>
<td>350</td>
<td>550</td>
<td>600</td>
<td>670</td>
</tr>
</tbody>
</table>

The above figure shows the current output has cover only 30 % of the annual incidence i.e. to cover the annual incidence the number of operation needs to increase 3 to 5 times. However, 80 % of all cataract operation were performed in the provinces.

Refractive Errors / Low Vision

Account for 10 % of the main causes of blindness. Hospital data shows 6.5 % of out patients has got Refractive Errors.

There are 14 Optometry Technicians trained in the country. There are up to 100 optical shops in Phnom Penh and in the provincial towns.

There are mobile refraction service in 5 provinces in 2000 which screened 5483 people and distributed 6509 glasses. In 2001 the mobile team screened 10,442 and distributed 8471 glasses. These mobile team had been carried out by the local Optometry Association, overseas NGOs and visiting optometrists. There were no more Optometry Technician Trained after 1998.
**Trachoma**

The magnitude of Trachoma problem is unknown in Cambodia. The Rapid Assessment in three provinces and examined 16803 (of which 2637 were children) revealed:

- Trichiasis 0.7 %
- TI/TF 2.9 %

The establishment of the National Trachoma Control Committee is under way.

**Vitamin A Deficiency**

Vitamin A Capsule (VAC) distribution started in Cambodia in 1994 and since 1996 the distribution of VAC was integrated with the National Immunization Days (NIDs) and since 1998 the distribution of VAC has gone through the routine immunization outreaches, the National Program for Immunization (EPI). The current National Micronutrient Survey conducted by HKI and MoH in 2000 shows VAC coverage varies widely among and within provinces (10 –55 %). However, there has been a steady decline in the prevalence of Vitamin A deficiency in the last five year.

**Childhood Blindness / Congenital Cataract**

Data on childhood blindness is limited. Surveys of children of the school for the blind in Cambodia showed that corneal scarring from Vitamin A deficiency, congenital cataract, high refractive errors and degenerative retinal diseases were the common causes of blindness and low vision.

Data on the prevalence of congenital cataract among Cambodians is unknown. Hospital based data showed that congenital cataract of familial origin is common in Cambodia. Operation for congenital cataract accounted for 2% of all ophthalmic operations within the eye units. Late presentation of the children for surgery, the lack of adequately trained personnel and equipment for pediatric surgery are contributory.

**C - Infrastructures and Appropriate Technology**

Currently, it is estimated that only 40% of Cambodians have access to eye care services in 10 provinces of the country. The estimated coverage of eye care services is about 25% and the utilization of eye care services was less that 1% in 1999. The number of eye units had increased from 4 in 1993 to 10 in 1998, 14 in 2000 and 15 by the end 2001. The total number of eye beds in the country has increased to 200 in 2001.

**D - Sustainability of Eye Care Development**

As part of an effort in building sustainable national capacities for universal coverage and easy access to eye care, various measures are being taken. The national plan for eye care development envisages a network of eye care service in each of the provinces of Cambodia, with development of 5 regional eye centers, including the national eye center in Phnom Penh for research, training and policy development.
Various forms of cost recovery systems are being developed within the eye units to ensure self reliance and sustainability of the eye care services, though a lot of work needs to be done to make this more efficient. A national workshop to address the issues of sustainability in the eye care programs was organized in 1999 to identify and address the needs, major constrains and challenges for development of sustainable eye care services in Cambodia. The workshop recommended that cost recovery system in the eye units should be strengthened, as part of an overall provincial hospital system with some form of autonomy. The accessibility of public services to poor patients should be improved through improvement in quality of services, affordable fees, exemption from payment and adequate information to the community.

E - NGOs in Vision 2020 in Cambodia

Various NGOs are supporting the eye care development plans in Cambodia. This includes Helen Keller International, CBM / Caritas, Help Age International and IRIS. Other includes Mekong Eye Doctors, SEVA Foundation, FHF and Asian Eye Care. Voluntary organizations like the Rotary International and Lions Sight First Program have also been involved.

+ Situation Ocular Infection In Cambodia:

Cambodia is located in tropical zone, hot climate and humidity so it favorite to many infection disease including eye infection. On the other hand, the eye care network and integration of primary eye care into primary health care not overall completed. This is a problem that primary eye care activities could not access to many communities. This situation make avoidable blindness could not be prevented. The magnitude of ocular infection is unknown. There is no study on this field since the eye care program started in 1994.

Starting to face on this problem, recently, we collected data on ocular infection from 12 eye unit from the provinces and 3 eye hospital in the capital city, data collection based on OPD registration and WARD registration for period 1 year from May 2000 to May 2001. The final VA after treatment when patient discharge from the hospital less than 3/60 after correction have been record, We counted for 1 blind case if the patient has one eye or both eye blind.

Data collection:

During 1 year from May 2000 to May 2001 the number of OPD patient 44890, among that 5351 have found ocular infection and 714 lead to blind by VA less than 3/60 after correction.

The ocular infection rate: \( \frac{5351 \times 100}{44890} = 11.92\% \)

Ocular infection lead to blind: \( \frac{714 \times 100}{44890} = 1.59\% \)
The Major condition of ocular infection:

- Conjunctivitis 45.44% (2886)
- Corneal ulcer 14.22% (903)
- Viral Keratoconjunctivitis 24.29% (1543)
- Trachoma 5.43% (345)
- Post injury endophthalmitis 0.64% (41)
- CMV retinitis 0.54% (36)
- Herpes simplex Keratitis 0.45% (29)
- Herpes zoster keratitis 0.40% (25)
- Ophthalmia neonatorum 0.11% (7)
- Post op endophthalmitis 0.06% (4)
- Other 8.38% (532)
The major cause lead to blind:

- Corneal ulcer 71.28% (509)
- Trachoma 12.32% (88)
- Viral Keratoconjunctivitis 5.75% (41)
- Post injury endophthalmitis 5.04% (36)
- CMV retinitis 3.92% (28)
- Herpes zoster Keratitis 0.56% (4)
- Herpes simplex keratitis 0.56% (4)
- Ophthalmia neonaturum 0.42% (3)
- Post op endophthalmitis 0.42% (3)

Ocular Infection lead to Blind

- □ Corneal ulcer
- □ Trachoma
- □ Viral Keratoconjunctivitis
- ■ CMV retinitis
- ■ HZK
- ■ Post op endophthalmitis
- □ Post injury endophthalmitis
- ■ HSK
- ■ Ophthalmia neonaturum
## Ocular infection in Cambodia

<table>
<thead>
<tr>
<th>Name of disease</th>
<th>Province</th>
<th>Capital city</th>
<th>Overall in Cambodia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Infect</td>
<td>No Blind</td>
<td>No Infect</td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>1259</td>
<td>0</td>
<td>1627</td>
</tr>
<tr>
<td>Ophthalmia neonaturum</td>
<td>6</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Trachoma</td>
<td>224</td>
<td>69</td>
<td>121</td>
</tr>
<tr>
<td>Corneal ulcer</td>
<td>795</td>
<td>421</td>
<td>108</td>
</tr>
<tr>
<td>Viral Keratoconjunctivitis</td>
<td>859</td>
<td>41</td>
<td>684</td>
</tr>
<tr>
<td>Herpes simplex Keratitis</td>
<td>19</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Herpes zoster keratitis</td>
<td>23</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>CMV retinitis</td>
<td>21</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Post injury endophthalmitis</td>
<td>34</td>
<td>30</td>
<td>7</td>
</tr>
<tr>
<td>Post op endophthalmitis</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>other</td>
<td>383</td>
<td>0</td>
<td>149</td>
</tr>
<tr>
<td>Total Number</td>
<td>3625</td>
<td>588</td>
<td>2726</td>
</tr>
<tr>
<td>OPD case Number</td>
<td>28295</td>
<td></td>
<td>16595</td>
</tr>
</tbody>
</table>
Strategies:
Strategy to prevent blindness relate to ocular infection and ocular infection by provided eye care service facility and quality of eye care in the hole country:

1. Increased coverage eye unit from 4 in 1994 to 15 in 2001.
2. Integrate PEC into PHC in some provinces
3. Trachoma control by health education, campaign trichiasis surgery providing lid rotation surgery skill and collaboration with other sector
4. Training program for midwife to prevent newborn ocular infection
5. Education, promotion program concerning to ocular safety through foster and TV spot

Constraints:
1. Eye care network not complete the hole country is not reach the community level.
2. Social economic problem
3. Transportation and communication difficulty
4. Knowledge and behavior of patients
5. Poor quality of care
6. Community participation

Future strategy:
1. Integration PEC into PHC should be complete and extend eye care service coverage the hole country.
2. Training program for mid level personal
3. Improved quality of eye care by upgrade microbiology laboratory
4. Promotion, Health education program and safety protection
5. Tertiary level referral hospital

Conclusion:
Cambodia is the country under developing not adequate eye care facility and have a lot of communicable disease and lack of CDC, so ocular infection is the one of the eye care problem in Cambodia and about 13.34% of ocular infection lead to blind. But most of blindness relate to ocular infection can be preventable and curable.

So in aim to reduce blindness by ocular infection, Cambodia need to develop the ocular infection control system to avoidable blindness by ocular infection problem.
Country Report on Prevention of Blindness in Lao P.D.R

Background:
- South East Asia and landlocked Country.
- Borders in the north with China and Myanmar, on the east with Vietnam, on the west with Thailand and on the south with Cambodia.
- Population: 5.2 million, on average 19 persons/sq.km, it comprises 3 main ethnic groups, the lowland Lao forms the majority of the population.
- There are 18 provinces.
- Buddhist beliefs form the basic for traditional way of life.
- The economy is mainly agricultural.
- 80% of the population live in the rural area.
- The population growth rate is 2.5%.
- The income per capita per year is 350 us$. The GDP growth rate is 7.2% (1997).

Map of Laos

General Health status
- Crude Birth rate 34/1000
- Crude Death rate 6.3/1000
- Infant mortality rate 82/1000
- Under 5 mortality rate 107/1000
- Maternal mortality rate 530/10000
- Life expectancy 59 male 57 female 61

Socio-economic status
- GDP US$ 350 per capita
- Safe water coverage 52%
- Latrine coverage 39%

Manpower

<table>
<thead>
<tr>
<th></th>
<th>Total number</th>
<th>Urban (%)</th>
<th>Rural (%)</th>
<th>Pop. ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ophthalmologist</td>
<td>6</td>
<td>3 (50%)</td>
<td>3 (50%)</td>
<td>800,000</td>
</tr>
<tr>
<td>Basic eye doctor</td>
<td>10</td>
<td>3 (30%)</td>
<td>7 (70%)</td>
<td>500,000</td>
</tr>
<tr>
<td>Ophthalmic N (MLP)</td>
<td>90</td>
<td>40 (45%)</td>
<td>50 (55%)</td>
<td>55,000</td>
</tr>
<tr>
<td>Refractionists</td>
<td>12</td>
<td>2 (17%)</td>
<td>10 (83%)</td>
<td>400,000</td>
</tr>
</tbody>
</table>
Magnitude of Blindness problem
Assessment of needs:

- The population: 5.2 million.
- Estimated that at least 1% are blind.
- Therefore, the total of blind persons are 50,000 people.

The leading cause of blindness is:

The table shows the causes of Blindness in Laos.

<table>
<thead>
<tr>
<th>CAUSES</th>
<th>% of Blind</th>
<th>Number Blind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>60%</td>
<td>30,000</td>
</tr>
<tr>
<td>Ocular infection</td>
<td>13%</td>
<td>6,500</td>
</tr>
<tr>
<td>(Trachoma, Corneal ulcer, Trauma,...)</td>
<td>10%</td>
<td>5,000</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>7%</td>
<td>3,500</td>
</tr>
<tr>
<td>Childhood blindness</td>
<td>10%</td>
<td>5,000</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total: 100% 50,000

Cataract Information

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (Million)</td>
<td>4.72</td>
<td>4.84</td>
<td>4.96</td>
<td>5.00</td>
</tr>
<tr>
<td>No. cat.ops/surgeon/yr</td>
<td>112</td>
<td>287</td>
<td>250</td>
<td>128</td>
</tr>
<tr>
<td>CSR</td>
<td>190</td>
<td>651</td>
<td>666</td>
<td>256</td>
</tr>
</tbody>
</table>

Number of cataract operation each year From 1996-2000 as well as the proportion of IOL implantation

Ocular infection

- Ocular infection is one of the leading causes of blindness (13%).
- Most of it occur with people who live in rural area of the country.
- Problem of public health especially is corneal ulcer.

Number of ocular infection

<table>
<thead>
<tr>
<th>O P D</th>
<th>Conj</th>
<th>Uveitis</th>
<th>Keratitis</th>
<th>TP</th>
<th>Corneal ulcer</th>
<th>Oph. Neosporsum</th>
</tr>
</thead>
<tbody>
<tr>
<td>V T</td>
<td>12,800</td>
<td>2600</td>
<td>67</td>
<td>124</td>
<td>60</td>
<td>25</td>
</tr>
<tr>
<td>S K</td>
<td>4,899</td>
<td>637</td>
<td>25</td>
<td>179</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>K M</td>
<td>1212</td>
<td>158</td>
<td>10</td>
<td>15</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>CH S</td>
<td>3629</td>
<td>213</td>
<td>19</td>
<td>110</td>
<td>58</td>
<td>4</td>
</tr>
<tr>
<td>O Y</td>
<td>1336</td>
<td>149</td>
<td>3</td>
<td>2</td>
<td>55</td>
<td>23</td>
</tr>
<tr>
<td>K K</td>
<td>1860</td>
<td>172</td>
<td>8</td>
<td>17</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>L B</td>
<td>2113</td>
<td>819</td>
<td>16</td>
<td>89</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>28,148</td>
<td>4748</td>
<td>140</td>
<td>536</td>
<td>316</td>
<td>122</td>
</tr>
</tbody>
</table>
Trachoma control program

- Trachoma control has been conducted in 10 provinces in the year 2000.
- Prevalence of trachoma is considered endemic.
- After one year of program intervention, a remarkable result has achieved.

Existing Manpower

- Inadequate manpower/refractionist in the country.
- A total of 12 refractionists: 3 work in VT prefecture and 9 in provinces.
- Some provincial eye units do not have refraction service yet.

Refraction Training Course

- Two months training for refractionist.
- Training four refractionists per year.
- We trained 8 refractionists two months, they came from other provinces who ever passed 4 months course for ophthalmic nurse. After finished course they returned to work in their eye units in VT prefecture and six provinces of Lao P.D.R.

Current situation of refraction service

- Existing manpower
- Refraction training
- Existing facilities
  - Inadequate manpower/refractionist in the country.
  - A total of 12 refractionists: 3 work in VT prefecture and 9 in provinces.
  - Some provincial eye units do not have refraction service yet.

Number of Optical Shop in Laos

<table>
<thead>
<tr>
<th>Province</th>
<th>Government</th>
<th>Private sector</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>VT Prefecture</td>
<td>2</td>
<td>7</td>
<td>&gt;40</td>
</tr>
<tr>
<td>Savannakhet</td>
<td>1</td>
<td>1</td>
<td>&gt;20</td>
</tr>
<tr>
<td>Khammouane</td>
<td>1</td>
<td>0</td>
<td>&gt;10</td>
</tr>
</tbody>
</table>
Barriers
- Lack of Awareness.
- Poverty.
- Maldistribution of Eye Care Personnel.
- Inadequate of Manpower.
- Difficult terrain: - Mountainous and Hilly regions.
  - Lack of roads and bad roads condition.
- Distance: - Long way to access to eye care services
  - Difficulty of transportation.

How can be these barriers overcome
- Health education
- Training more various categories of eye care personal.
- Training local personals in eye care.
- Mobile eye care services.

Sources of funding:

<table>
<thead>
<tr>
<th>Activities</th>
<th>Sources of funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residency training program</td>
<td>CBMI (Australia)</td>
</tr>
<tr>
<td>Ophthalmic Nurses &amp; refracti</td>
<td>CBM</td>
</tr>
<tr>
<td>MCI Program</td>
<td>Lions Clubs International</td>
</tr>
<tr>
<td>School Eye Health Development</td>
<td>Dark &amp; Light Foundation</td>
</tr>
<tr>
<td>IOLs</td>
<td>CBM &amp; Blindness Foundation (USA)</td>
</tr>
</tbody>
</table>

Conclusions:
- In generally cataract patients who have VA>1/60 still have a problem.
- Second common cause is ocular infection especially corneal ulcer. 80% of these patients are poor farmers leaving in rural areas and they can not access to eye care services.
- The priority group for refractive error in Lao is the people over the age of 40 yrs, reading problem but we emphasize also to school children for prevent amblyopia. The recent survey showed such around 1% for refractive error in school children who have VA<6/12.
- Trachoma prevalence is high in some provinces.

Number of refraction service

<table>
<thead>
<tr>
<th>Province</th>
<th>Refraction clinic</th>
<th>Optometrist</th>
</tr>
</thead>
<tbody>
<tr>
<td>VT Prefecture</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Savannakhet</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Champasak</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Khonmouan</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bolikhamsay</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Xeungxuang</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Pakse</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Oudomxay</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Recommendation:

- Sharing cost for cataract surgery.
- Develop eye care network integrate PEC into PHC.
- Provide low cost reading spectacles to community.
- Subsidy cost for ocular infection, especially corneal ulcer.

THANKS FOR YOUR KIND ATTENTION

Welcome to Laos

Visit Laos 2000
THE OCULAR INFECTION IN VIETNAM

I. Introduction

- One of the most common eye diseases in VN due to tropical climate with high temperature and humidity, poor condition of hygiene.
- 1995 national survey on blindness and eye diseases in VN:
  - Corneal opacities was the second cause of blindness, 7.8% of blind people. More than half of them are due to entropion.

II. Some data on ocular infection in VNIO
(Inpatients during 5 years)

<table>
<thead>
<tr>
<th>Year</th>
<th>Corneal ulcers</th>
<th>Uveitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>483</td>
<td>505 (107 endophth.)</td>
</tr>
<tr>
<td>1998</td>
<td>511</td>
<td>495 (151)</td>
</tr>
<tr>
<td>1999</td>
<td>457</td>
<td>586 (196)</td>
</tr>
<tr>
<td>2000</td>
<td>401</td>
<td>547 (176)</td>
</tr>
<tr>
<td>2001</td>
<td>411</td>
<td>646 (274)</td>
</tr>
<tr>
<td>Total</td>
<td>2263</td>
<td>2779 (904)</td>
</tr>
</tbody>
</table>

1. Infectious keratitis and corneal ulcer

- According to one research conducted in conjunctiva-corneal department of VNIO from June 1998 to April 1999 (10 months) on the 1200 inpatients, there are 350 patients suffering from infectious keratitis:

  * Remarks:
    - Proportion of fungal keratitis was highest: 41.7%, then bacterial keratitis: 38.2%
    - Majority of patients lived in rural areas: 62%, with the poor condition. The incidence of male was higher than female
    - Agricultural trauma was the main risk factor (35% of corneal ulcer)
    - 200/350 (57%) patients received medical treatment by themselves or by local physicians before hospitalization. 101 patients (28.8%) used antibiotics. Particularly 44 patients (12.6%) have been treated with topical corticosteroids. 55 patients (15.7%) used unknown medication.
Remarks:

- Clinical features: Almost patients were severe. 309 out of 350 patients (88.6%) had ulcer with 2/3 thickness ulcer cornea, 33 patients (9.4%) had threatened perforation of cornea and 26 patients (7.4%) had corneal perforation. Therefore the predominance of the patients had poor visual acuity after treatment (261 out of 350 patients (74.6%) had VA less than 1/20).

Conclusion

- External ocular infection is one of the most common cause of visual disability in VN.
- Clinical features are complicated and severe because most of patients presented late for hospital examination and almost patients have used medications at home without advice of the physician, especially the abusing use of corticosteroids due to the poor knowledge and the poor drug control of the government.

AGENT IDENTIFICATION

- During 5 years, 5771 patients with corneal ulcer have been isolated: 2,258 patients (39.12%) had positive results, among them:
  - 1,060 patients (46.9%) had positive bacteria including: Pseudomonas aeruginosa (71%), Staphylococcus (15.2%), Moraxella (8.8%), Streptococcus (2.28%) and the others (2.36%)
  - 1,195 patients (52.92%) had positive fungi including: Fusarium (26.28%), Filamentous (23.18), Aspergillus (19.9), Cephalosporum (5.2%) and the others (5.9), 19.6% not grown with culture
  - Acanthamobae: 3 cases (0.13%)

Conclusion

- The incidence of keratomycosis gradually increases (from 7.9% for the 10 year period study (1980-1990) to 20.7% for 6 year period study (1991-1996)
- Recently the prognosis of bacterial corneal ulcer is getting better thank to variety of strong antibiotics (fluoroquinolones, cephalosporin, vancomycin...) but situation of the keratomycosis becomes more severe due to abuse of steroid and the antifungal drug is not available and expensive.

2. Study on the clinical forms and some epidemiological factors of uveitis in VN children

2.1. Rationale

- During some recent years, the number of children with uveitis treated in the VNIO increases rapidly, the clinical forms are variable. Patients come late so the treatment outcome is very limited. We recognized the number of uveitis patients increases obviously in some months of the year, so we have done this study with following purposes:
  - Study the clinical forms of endogenous uveitis in children
  - Study some epidemiological factors of childhood uveitis

2.2. Patients

- Children from 0 to 15 years old examined in VNIO with diagnosis of uveitis and treated in the pediatric eye department.
2.3. Study methodology

- *Prospective study: children with uveitis treated from September 2000 to September 2001 (group 1)*
- *Retrospective study: children with endogenous uveitis or endophthalmitis treated in 5 years from January 1996 to December 2000 (excluding the uveitis or endophthalmitis due to trauma, surgery, corneal ulcer...)* (group 2)

2.4. Study result

- **2.4.1. For group 1** (Prospective study): 85 patients (50 females, 35 males) with endogenous uveitis, aged from 0 to 15 year old, treated in pediatric dep. from September 2000 to September 2001.

### a) age and sex

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=2y</td>
<td>4</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>3-5 y</td>
<td>10</td>
<td>13</td>
<td>23</td>
</tr>
<tr>
<td>6-10 y</td>
<td>6</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td>11-15 y</td>
<td>15</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>35</td>
<td>50</td>
<td><strong>85</strong></td>
</tr>
</tbody>
</table>

Remarks:
- Youngest patient is 2 months
- A big number of patients belong to age group less than 5 year old, accounting for 39%.

### a) Clinical forms:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of patients</td>
<td>12</td>
<td>1</td>
<td>13</td>
<td>59</td>
<td>4</td>
<td>85</td>
</tr>
<tr>
<td>%</td>
<td>14.1</td>
<td>1.2</td>
<td>10.6</td>
<td>69.4</td>
<td>4.7</td>
<td>100</td>
</tr>
</tbody>
</table>

Remark:
- Endophthalmitis are most common (69.4%)

### b) Clinical forms and age:

<table>
<thead>
<tr>
<th>Forms</th>
<th>&lt;=2y</th>
<th>3-5y</th>
<th>6-10y</th>
<th>11-15y</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>An. uve.</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Post. uve.</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total uve.</td>
<td>1</td>
<td>8</td>
<td>9</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Endoph.</td>
<td>10</td>
<td>18</td>
<td>19</td>
<td>12</td>
<td>59</td>
</tr>
<tr>
<td>Panoph.</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13</td>
<td>21</td>
<td>21</td>
<td>30</td>
<td>85</td>
</tr>
</tbody>
</table>

- Anterior uveitis is often encountered in the age group 11-15 year old (67%)
- Endophthalmitis is often encountered in the age group less than 5 year old (47%)

2.4.2. For group 2

(Retrospective study):

- 831 patients (440 males (52.9%) and 391 females (47.1%) with uveitis or endophthalmitis treated in the pediatric eye department from 1/1996 to 12/2000.)

---

- 53 -
a) Number of patients distributed by the months of the year during 5 years:

<table>
<thead>
<tr>
<th>Year</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>95</td>
<td>14</td>
<td>9</td>
<td>13</td>
<td>7</td>
<td>15</td>
<td>11</td>
<td>12</td>
<td>14</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>151</td>
</tr>
<tr>
<td>96</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>6</td>
<td>12</td>
<td>9</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>13</td>
<td>22</td>
<td>126</td>
</tr>
<tr>
<td>97</td>
<td>7</td>
<td>8</td>
<td>12</td>
<td>13</td>
<td>13</td>
<td>16</td>
<td>14</td>
<td>15</td>
<td>19</td>
<td>21</td>
<td>17</td>
<td>111</td>
</tr>
<tr>
<td>98</td>
<td>9</td>
<td>7</td>
<td>13</td>
<td>18</td>
<td>11</td>
<td>17</td>
<td>19</td>
<td>23</td>
<td>20</td>
<td>20</td>
<td>15</td>
<td>108</td>
</tr>
<tr>
<td>99</td>
<td>12</td>
<td>5</td>
<td>6</td>
<td>15</td>
<td>16</td>
<td>12</td>
<td>19</td>
<td>16</td>
<td>10</td>
<td>20</td>
<td>11</td>
<td>91</td>
</tr>
</tbody>
</table>

Total: 126 + 111 + 108 + 91 = 436

Remark: The patients were most crowded in 3 months: September, October and November (Autumn)

b) Clinical forms:

701 out of 803 medical records having the classification of clear clinical forms:
- Anterior uveitis: 119 cases, 17%
- Posterior uveitis: 12 cases, 1.7%
- Pan uveitis: 66 cases, 8.6%
- Endophthalmitis: 492 cases, 70.2%
- Panophthalmitis: 18 cases, 2.5%

2.5. Discussion

2.5.1. Age of patients relating to uveitis
*In the group 1 (prospective study):
- 39% patients belongs to age group under 5 year old (34/85 cases)
- About 50% of endophthalmitis and panophthalmitis were met in children under 5 years old (31/63 cases)
- Explanation: Inflammation reaction in young children is stronger than that in older children and adult, childhood eye tissue is softer and the eye defense barrier is easier to be break up, so it is more sensible to the toxin.

There is a remarkable difference between children and adult: in children the endophthalmitis and the panophthalmitis represent a large proportion (74%), while in adult: it accounts for a low percentage (7.5%) but pan-uveitis represents 50.3%

The result depends much on the clinical forms of uveitis in children: for the anterior uveitis, the result is very optimistic whereas pan uveitis, endophthalmitis result is very poor.
2.5.3. Causative Agents

93 vitrectomies were done for endophthalmitis (among 831 cases of uveitis), specimen are cultured. Identification is as follows:
- Pseudomonas aeruginosa: 43%
- Streptococcus: 5.3%
- Moraxella: 8.6%
- Fungus: 4.3%
- Others: 38.8%

2.5.4. Uveitis relating to weather

- Uveitis happen all year round, with highest frequency in September, October and November (Autumn).
- Other study in Ho Chi Minh city (South Vietnam), showed no remarkable difference between the months of the year. We think that in the North of Vietnam, there are 4 seasons with different climate, whereas in the South there are only the rainy and dry seasons.

2.6. Conclusion

- With the prospective study on 85 patients and the retrospective study on 831 patients in the pediatric eye department of VNIO, we can conclude that:
- Uveitis in children is one severe disease with variety of forms, its cause is complicated, difficult to identify the agents, difficult to prognosis its evolution, the treating result is limited.
- The endophthalmitis represents a high proportion in the total number of children with endogenous uveitis. This is contrary to the adult.

- The endophthalmitis is often encountered in children under 5 year old. The younger is the children, the more severe is the endophthalmitis. Although the treatment is very intensive but the result is very poor. A lots of children in this age group must be enucleated.
- Anterior uveitis, posterior uveitis and total uveitis is often met in older children (11-15 year old), its treatment is easier and the result is more optimistic.
- Childhood endogenous uveitis appears with highest frequency in the 3 months of the Autumn, so it has a close relationship to the weather. It is different between the regions due to the climate. The clearest different between 2 regions: the North and the South of Vietnam.

Anterior uveitis: posterior synechia of the iris

Precipitates behind of the cornea
Total uveitis: precipitates behind the cornea

Endophthalmitis: hypopion and exudate

Endophthalmitis: vitreous opacity

Endophthalmitis in late stage: vitreous organization

Panophthalmitis: pus fill the A.C and vitreous cavity

Sequella of uveitis: Pigmentary ring on the lens surface
6 months after lensectomy and vitrectomy

Cataract: sequelae of the total uveitis
Administrative Structure of Trachoma Control and Prevention of Blindness Programme

Location
- Between North Latitude 9° 30' and 28° 30'
- South East Asia
- Total Area – 676,552 Sq.km (261,218Sq.ml)
- North to South – 2085 km
- East to West – 930 km
- Population: (2000 Estimate) is 50 million. Majority in Rural Areas.
- The overall population density is 69 persons per sq.km, one of the lowest in East Asia.

National Health Plan
General Objectives
- "To make primary eye care available all and eliminate avoidable blindness with special emphasis on cataract".
- "Reduction and ultimate elimination of blindness due to trachoma, cataract, glaucoma, ocular trauma, corneal blindness, malnutrition etc., by promotion of eye health, prevention, curative, sight restoration and sight saving surgical intervention".

National Objectives
- To prevent disability due to blindness and to reduce the blindness rate to less than 0.5% in all States and Divisions of Myanmar.

INFRASTRUCTURE

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Number of eye beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>500</td>
</tr>
<tr>
<td>NGO (Sanga Hospital, Muslim Free, Thidagu)</td>
<td>100</td>
</tr>
<tr>
<td>Private</td>
<td>50</td>
</tr>
</tbody>
</table>

Eye care teams exist in private and public sectors:
- Average no. of surgery/week = 25000/52 = 480
- Refractive services = State and Divisional level
- Regular school screening programme = present

- Eye care facilities are available in the country at all level: schools, government, polyclinics, university and public hospitals, private sector.
- There are adequate number of beds for all ophthalmic patients, although the majority of surgeries are day cases.
- There is no waiting list and surgeries can be performed on demand in the private sector, or within the week in the public sector.
- In some N.G.O. Eye center (M.F.H.) waiting list 1-2 weeks because patients outnumbered eye surgeon.
HUMAN RESOURCES (Manpower)
Existing Human Resources For Eye Care Deliveries in the whole nation

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Health Workers: Population ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ophthalmologist</td>
<td>168</td>
<td>1:298,000</td>
</tr>
<tr>
<td>Ophthalmic Assistant (PBL Field Staff)</td>
<td>391</td>
<td>1:130,000</td>
</tr>
<tr>
<td>Optician/Optometrist</td>
<td>30</td>
<td>1:1.7 million</td>
</tr>
<tr>
<td>Orthoptists</td>
<td>2</td>
<td>1:25 million</td>
</tr>
<tr>
<td>Ophthalmic Nurses</td>
<td>250</td>
<td>1:200,000</td>
</tr>
<tr>
<td>Equipment Technical</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Eye Care Manager</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>PHC Workers trained eye care</td>
<td>5,000</td>
<td>1:10,000</td>
</tr>
</tbody>
</table>

Major Causes of Blindness in Myanmar 1998 (Total population – 50 million)

<table>
<thead>
<tr>
<th>Causes of Blindness</th>
<th>No. of Blind person</th>
<th>Proportion (%) of blindness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>190,000</td>
<td>63</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>48,000</td>
<td>16</td>
</tr>
<tr>
<td>Posterior segment disease</td>
<td>21,000</td>
<td>7</td>
</tr>
<tr>
<td>Trachoma</td>
<td>12,000</td>
<td>4</td>
</tr>
<tr>
<td>Corneal opacity</td>
<td>9,000</td>
<td>3</td>
</tr>
<tr>
<td>Ocular trauma</td>
<td>3,000</td>
<td>1</td>
</tr>
<tr>
<td>Others</td>
<td>18,000</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>300,000</td>
<td>100</td>
</tr>
</tbody>
</table>

CORNEAL BLINDNESS
CORNEAL ULCERS (Bacteria, Fungal, Viral, Nutritional (Childhood))

- One of the commonest causes of blindness in Myanmar.
- Common occurrence in the Ophthalmological practice common among farmers, agriculture workers, industrial workers → occupational hazard.
- Most corneal ulcers are resistant to treatment.
- Perforation and Blindness common.

MAIN CAUSES

- MISMANAGEMENT
- POOR HEALTH EDUCATION
- LACK OF KNOWLEDGE OF ETIOLOGICAL AGENTS
- INAPPROPRIATE USE OF ANTIBIOTICS AND STEROIDS
- NON VAILIBILITY OF ANTI FUNGAL DRUGS

Comparison of Isolated Organisms causing Corneal Ulcers

<table>
<thead>
<tr>
<th>No.</th>
<th>Mya Han (%)</th>
<th>Ke Ko Tin (%)</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>28</td>
<td>34</td>
<td>28</td>
<td>42.5</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>14</td>
<td>37.5</td>
<td>36.8</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>13</td>
<td>21.9</td>
<td>36.1</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>1</td>
<td>17.5</td>
<td>2.8</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>2.8</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>-</td>
<td>3.12</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>-</td>
<td>3.12</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>-</td>
<td>3.12</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>-</td>
<td>3.12</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>7</td>
<td>12.5</td>
<td>19.4</td>
</tr>
<tr>
<td>11</td>
<td>40</td>
<td>10</td>
<td>40</td>
<td>12.5</td>
</tr>
</tbody>
</table>

1997 Dr. Aye Win Kyi
Bacterial Flora of External Eye Infections
Eye Hospital Yangon

<table>
<thead>
<tr>
<th>No.</th>
<th>Bacterial</th>
<th>Normal Eye (160) Cases</th>
<th>Ext: Eye Info: (150) Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coag: (neg) staph:</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>2</td>
<td>Diphtheroids</td>
<td>30%</td>
<td>32%</td>
</tr>
<tr>
<td>3</td>
<td>Staph: aureus</td>
<td>26%</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Moraxella</td>
<td>4%</td>
<td>13%</td>
</tr>
<tr>
<td>5</td>
<td>Bacillus species</td>
<td>2%</td>
<td>6.7%</td>
</tr>
<tr>
<td>6</td>
<td>Haemophilus species</td>
<td>2%</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Streptococci</td>
<td>2%</td>
<td>6.7%</td>
</tr>
<tr>
<td>8</td>
<td>Pseudomonas</td>
<td>-</td>
<td>6.7%</td>
</tr>
<tr>
<td>9</td>
<td>Coliforms</td>
<td>-</td>
<td>2.7%</td>
</tr>
</tbody>
</table>
FUNGAL INFECTIONS
KO KO TIN (80 CASES)

<table>
<thead>
<tr>
<th>No.</th>
<th>Organism</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Candida Parapsilosis</td>
<td>With Staph Albus</td>
</tr>
<tr>
<td>2</td>
<td>Candida Parapsilosis</td>
<td>With Diptheroids</td>
</tr>
<tr>
<td>3</td>
<td>Candida Guilliermondii</td>
<td>With Staph Albus</td>
</tr>
<tr>
<td>4</td>
<td>Aspergillus Flavus (3)</td>
<td>With Diptheroids</td>
</tr>
<tr>
<td>5</td>
<td>Aspergillus Flavus</td>
<td>With Non Haemo: Strep</td>
</tr>
</tbody>
</table>

HERPETIC OCULAR INFECTION
- Less common than bacterial and fungal infections.
- Common among patients with Tuberculosis Malignant disease H.I.V. patients.
- Laboratory tests not available yet.
- Each and every case of keratitis and corneal ulcer possibility of viral etiology should be considered.
- Antiviral drugs as eye drops and tables are available but they are very much expensive.

Prevalence of Herpetic ocular infection (K.K.K. 1998)

<table>
<thead>
<tr>
<th>HSV</th>
<th>HSV</th>
<th>HZO</th>
<th>HZO</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>%</td>
<td>NO</td>
<td>%</td>
</tr>
<tr>
<td>36</td>
<td>60%</td>
<td>24</td>
<td>40%</td>
</tr>
</tbody>
</table>

Refraction service system in Myanmar
- Ordinary refraction and post operative refraction mainly done by Ophthalmologists.
- Because of very few refractionists and optometrists.
- Refraction mainly done by Retinoscopy.
- In the Hospitals and in some eye care centres refraction is done free of charge by the refractionists.
- Autorefractometer is rarely used, but they are widely used in private eye clinics.
- Field visits by ophthalmologists and refractionists are frequent to villages and remote areas - eye examination and refraction are done free of charge and reading spectacles are given free.
Sources of data

• Year 2000
• 17 Eye clinics from 17 general hospitals
  North 2  Northeast 5  Central 3
  East 1  South 6
• Total of 242,674 OPD patient visits
• 20,891 eye patient admissions

Size classification of hospitals in the study

• small  4000-7000  OPD visits/year
• medium 10,000-15,000  OPD visits/year
• large 18,000-35,000  OPD visits/year

Infection-related diagnosis in OPD

1. Conjunctivitis  5.11%
2. Viral conjunctivitis, EKC, AHC  4.82%
3. Hordeolum  3.91%
4. Keratitis  1.68%
5. Uveitis, iridocyclitis, iritis  1.27%
6. Corneal ulcer  1.25%
7. Blepharitis  1.18%
8. Dacryoadenitis  0.66%
9. Keratoconjunctivitis  0.64%
10. Chorioretinal inflammation  0.30%

Infection-related diagnosis in OPD

11. Herpes ocular disease  0.22%
12. Endophthalmitis  0.19%
13. Zoster ocular disease  0.16%
14. Trachoma  0.15%
15. Neonatal conjunctivitis  0.12%
16. Inflammation of orbit  0.12%
17. HIV disease  0.11%
18. 4月21日この前のスライド末尾修正

Causes of Monocular Blind 1994

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>prevalence per 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>51</td>
<td>4.54</td>
</tr>
<tr>
<td>Phthisical/disorganised/ absent globe</td>
<td>13.5</td>
<td>1.20</td>
</tr>
<tr>
<td>Corneal opacity</td>
<td>6.2</td>
<td>0.55</td>
</tr>
<tr>
<td>Optic atrophy</td>
<td>6.2</td>
<td>0.55</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>5.1</td>
<td>0.45</td>
</tr>
</tbody>
</table>

Infection-related diagnosis in OPD

11. Herpes ocular disease  0.22%
12. Endophthalmitis  0.19%
13. Zoster ocular disease  0.16%
14. Trachoma  0.15%
15. Neonatal conjunctivitis  0.12%
16. Inflammation of orbit  0.12%
17. HIV disease  0.11%
18. 4月21日この前のスライド末尾修正
Serious ocular infections in OPD

- Keratitis
- Uveitis
- Corneal ulcer
- Chorioretinitis
- Herpes ocular disease
- Zoster ocular disease
- Trauma
- Orbital inflammation
- HIV disease

Distribution of OPD ocular infection in different regions

- North
- NE
- Central
- East
- South
- Total

Ocular infection in IPD

1. Keratitis 1.68%
2. Uveitis, iridocyclitis, iritis 1.27%
3. Corneal ulcer 1.25%
4. Chorioretinitis 0.30%
5. Herpes ocular disease 0.22%
6. Endophthalmitis 0.19%
7. Zoster ocular disease 0.16%
8. Trachoma 0.15%
9. Inflammatory of orbit 0.12%
10. HIV disease 0.11%

Distribution of OPD ocular infections in different regions

- North
- NE
- Central
- East
- South
- Total

Distribution of IPD ocular infections in hospitals of different sizes

- Small
- Medium
- Large

Distribution of IPD ocular infections in hospitals of different sizes
Common Predisposing Factors

1. Organic materials trauma during agricultural work
2. Foreign bodies: dust, earth, stone, iron
3. Insects
4. Contact lens (Siriraj and Ramathibodi Hospital)

Self-management

- average onset: 4-7 days before seeing doctor (Buriram Hospital)
- most of the patients see the health staff at the health offices as the first point of contact (Vajamun P.: A study of self-care behavior of the corneal ulcer patients at Maharat Nakhon Ratchasima Hospital 1994)

Laboratory investigation

- 18% (Udomthani Hospital)
- 22.4% (Data from 17 MOPH hospitals)
  of cases’ scraping sample were sent for smear/culture

Patients treated before reaching hospital

<table>
<thead>
<tr>
<th>Hospital</th>
<th>% treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramathibodi U Hospital</td>
<td>70</td>
</tr>
<tr>
<td>Siriraj U Hospital</td>
<td>92</td>
</tr>
<tr>
<td>Chiang Mai Hospital</td>
<td>72.2</td>
</tr>
<tr>
<td>Buriram hospital</td>
<td>50.6</td>
</tr>
</tbody>
</table>
## Yields of smear and culture

<table>
<thead>
<tr>
<th>Study Center</th>
<th>% of Positive Yield (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>smear</td>
</tr>
<tr>
<td>Ramathibodi U Hospital</td>
<td>34.4</td>
</tr>
<tr>
<td>Siriraj U Hospital</td>
<td>58</td>
</tr>
<tr>
<td>Songklanagarind U Hospital</td>
<td>38.2</td>
</tr>
<tr>
<td>Sawanpracharuk Hospital</td>
<td>48.8</td>
</tr>
<tr>
<td>Udornthani Hospital</td>
<td>47.2</td>
</tr>
</tbody>
</table>

## Causative Bacteria

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Causative Bacteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Konkaen U</td>
<td>pseudomonas (52.6%)</td>
</tr>
<tr>
<td></td>
<td>streptococcus (10.0%)</td>
</tr>
<tr>
<td></td>
<td>klebsiella (5.3%)</td>
</tr>
<tr>
<td>Ramathibodi U</td>
<td>pseudomonas</td>
</tr>
<tr>
<td></td>
<td>streptococcus</td>
</tr>
<tr>
<td>Siriraj U</td>
<td>pseudomonas</td>
</tr>
<tr>
<td></td>
<td>micrococcus</td>
</tr>
<tr>
<td>Songkranagarind U Hospital</td>
<td>pneumococcus</td>
</tr>
<tr>
<td></td>
<td>pseudomonas</td>
</tr>
<tr>
<td>Chang Mai</td>
<td>pneumococcus (29.9%)</td>
</tr>
<tr>
<td></td>
<td>pseudomonas (15.4%)</td>
</tr>
<tr>
<td>Sawanpracharuk</td>
<td>gm + cocci</td>
</tr>
<tr>
<td></td>
<td>pseudomonas</td>
</tr>
<tr>
<td>Udornthani</td>
<td>pseudomonas</td>
</tr>
<tr>
<td></td>
<td>staphylococcus</td>
</tr>
<tr>
<td></td>
<td>streptococcus</td>
</tr>
</tbody>
</table>

## Causative Fungi

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Causative Fungi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Konkaen U</td>
<td>torulosis (67.3%)</td>
</tr>
<tr>
<td></td>
<td>aspergillus (10.3%)</td>
</tr>
<tr>
<td>Ramathibodi U</td>
<td>aspergillus (67.3%)</td>
</tr>
<tr>
<td></td>
<td>pythium (52.6%)</td>
</tr>
<tr>
<td>Siriraj U</td>
<td>aspergillus (10.3%)</td>
</tr>
<tr>
<td></td>
<td>chlastrum (52.6%)</td>
</tr>
<tr>
<td>Songkranagarind U Hospital</td>
<td>aspergillus (10.3%)</td>
</tr>
<tr>
<td></td>
<td>cladosporium (25.4%)</td>
</tr>
<tr>
<td></td>
<td>aspergillus (10.3%)</td>
</tr>
<tr>
<td>Chang Mai</td>
<td>aspergillus (10.3%)</td>
</tr>
<tr>
<td></td>
<td>cladosporium (25.4%)</td>
</tr>
<tr>
<td></td>
<td>torulosis (67.3%)</td>
</tr>
<tr>
<td>Sawanpracharuk</td>
<td>gm + rhizopus</td>
</tr>
<tr>
<td></td>
<td>torulosis (67.3%)</td>
</tr>
<tr>
<td>Udornthani</td>
<td>torulosis (67.3%)</td>
</tr>
</tbody>
</table>

## Sensitivity of organisms to antibiotics in Udorn Hospital

<table>
<thead>
<tr>
<th>Antimicrobial Agent (AM)</th>
<th>Pseudomonas</th>
<th>Streptococcus</th>
<th>Klebsiella</th>
<th>Mucor</th>
<th>Aspergillus</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amikacin</td>
<td>97</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Carbenemide</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Colistin</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

## Results of treatment

<table>
<thead>
<tr>
<th>Hospital</th>
<th>healed (%)</th>
<th>enucleated (%)</th>
<th>PKP (%)</th>
<th>PKP waiting (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramathibodi U</td>
<td>44 (73%)</td>
<td>3 (5%)</td>
<td>3 (6.3%)</td>
<td>1 (13.3%)</td>
</tr>
<tr>
<td>Siriraj U</td>
<td></td>
<td>3 (5%)</td>
<td>3 (6.3%)</td>
<td>1 (13.3%)</td>
</tr>
<tr>
<td>Sawanpracharuk</td>
<td>153 (95.6%)</td>
<td>4 (2.5%)</td>
<td>3 (1.9%)</td>
<td></td>
</tr>
<tr>
<td>Bertram</td>
<td></td>
<td>3 (2.4%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Endophthalmitis

- Predisposing factors
  - penetrating trauma 24.1%
  - Postoperative 17.2%
  - corneal ulcer 17.2%
  - nonpenetrating trauma 16.4%

MOPH Eye care network and facilities for ocular infection

<table>
<thead>
<tr>
<th>Year 2000</th>
<th>numbers</th>
<th>Eye Dpmt</th>
<th>smear</th>
<th>bacterial</th>
<th>fungus</th>
<th>culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Hospital</td>
<td>25</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>General Hospital class 1</td>
<td>42</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>class 2</td>
<td>25</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Community Hospital</td>
<td>720</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Health Center</td>
<td>9,694</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Human resources: Year 2000

<table>
<thead>
<tr>
<th></th>
<th>Numbers</th>
<th>Health workers/ population ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ophthalmologists</td>
<td>584</td>
<td>1:102,740</td>
</tr>
<tr>
<td>Ophthalmic nurses</td>
<td>408</td>
<td>1:147,000</td>
</tr>
<tr>
<td>General practitioners</td>
<td>18,140</td>
<td>1:3,394</td>
</tr>
<tr>
<td>Health Center workers trained in eye care</td>
<td>9,838</td>
<td>1:6,100</td>
</tr>
<tr>
<td>Health volunteers</td>
<td>714,072</td>
<td>1:85</td>
</tr>
</tbody>
</table>

Thank You for Your Attention
Panel discussion 1
Ocular Infection

Panel Discussion on Weakness and Strength

Panelists:

1- Dr. Ngy Meng (Cambodia)
2- Dr. Siphetthavong (Lao)
3- Dr. Patpong (Thailand)
4- Dr. Ko Ko Tin (Myanmar)
5- Dr. Tran Duy Kien (Viet Nam)

Cambodia: Weakness

At all levels of eye care network

1. Poor Knowledge
2. Consult or treated by traditional heater
3. Misuse of medicine (steroid)
4. Presentation to eye hospital late
5. Referral system not well functioning
6. Lack of medicine, anti fungus, viral
7. Lack of microbiological laboratory in second and third level of eye care system.

What Needs?

1. Community level:
   - Train volunteer health worker and PEC worker
   - Health education
   - Provide teaching material and transportation facility

2. Provincial level:
   - Special training eye doctor, MLP and laboratory technicians on microbiology
   - Update on ocular infection treatment and surgical skill PKP
   - Need laboratory equipment for smear, culture and sensitive test
   - Need eye drug supplies as: anti fungus, anti viral
   - Develop monitoring and supervision system

3. National and regional level
   - Special training of microbiology
   - Establishment of eye bank facilities and eye bank management
- Special training on surveillance system for all eye care professionals
- Continuing to Upgrade knowledge for ophthalmologist
- Establishment of Subspecialty training
- Doing scientifically Research
- Need microbiology lab equipment and supplies
- Need eye bank facility and instruments

Lao P.D.R : Weakness

- A reason:
  - Poverty.
  - People respect spiritual.
  - Treat with medicine traditional.
  - Low income.
  - Low education.
  - Lack of essential drug.
  - Eye care network not strongly enough yet into community.
  - Difficulties of terrain.
  - Bad road
  - Difficult to access to eye care services.
  - No have essential drug.
  - Low understanding the knowledge about eye problem.
  - Almost staff at the health center do not get training in eye care

- How can these barriers be overcome:
  - Primary level of eye care:
    - Health education for individual & families, booklet, Poster etc....
    - Sanitation & water supply.
    - Training volunteer for community eye health workers.
    - Provide essential drug for CEHWs to give the first aid and safe the eye.
    - Every staff at the health center should be trained in PEC and they should know how to integrated into PHC
    - Severe cases immediately referral.

  - Secondary level of care service:
    - Health education.
    - Training of staff of health centers.
    - Special training course of ocular infection.
    - Provide essential drug and some anti fungal drug for District Hospital.
    - Immediate referral cornea ulcer cases to tertiary level.
Tertiary level of eye care:

- Adequate proper management preventing in serious of complication therapeutic.
- Refresh course of Keratoplasty.
- Training for sub special cornea clinic.
- Eye bank.
- Laboratory (Smear, Gram stain, Culture)
- Provide anti fungal & anti bacterial drug for provincial & regional hospital.

Thailand

Thai's weak points in ocular infection

1. Surveillance and information system
   Although our information recording and reporting system have been established which require every hospital to record and report monthly to the central statistical department at the central level and publish their annual report at the provincial level and these data were made uniform by adopting ICD10,ICD9CM., we still lack a central responsible agency to analyses and make use of these data for eye care management.

2. Our eye care network and facilities are now strongly setup and sufficient.
   Bacterial culture laboratories are existed in every general hospital in every province. Fungus culture laboratories are available in some regional hospitals. But these facilities are under utilized as only around 20% of corneal ulcer cases are scraped and sent for smear or culture before treatment despite our general practice guidelines issued by Thai Royal Society of Ophthalmology recommend that every suspected corneal ulcer cases should do so. Without these evidence-based practice, ophthalmologists tend to give broad spectrum antibiotics as first choice. And they are usually under affluence by commercial drug company or rely on newly developed drug. This will risk drug resistance and increase the cost of treatment.

3. Our eye bank system is still weak. A strong eye bank system is required to support the successful combat of serious corneal infection. We still lack public motivation and eye bank management skills to adequately supply corneal tissue for PKP

Additional comments:
Support Prof.Para that we should have socio-cultural knowledge of the people who often come late to seek medical help in corneal ulcer. For the patients who get corneal injury in the farm during their harvest season before developing ulcer. They need to wait until finish harvesting before they can go to see a doctor. The ophthalmologists should be flexible and delegate their authority to
the community doctor or health officer to give initial simple antibiotics treatment and give daily follow up close to their home while they still can continue their work.

Myanmar

I. Weakness.

1. Lack of health education in the community.
2. Mismanagement of eye infection.
3. Lack of medicine (e.g., anti bacterial, antifungal, and antiviral drugs).
4. Lack of laboratory facilities.
5. Late arrival to the health centers.
6. Indiscriminate use of steroids by the patients.

II. What needs?

1. Community level
   • Health education to the public and PEC workers, village elders, teachers, red cross volunteers, etc...
   • Training of PEC workers.

2. District level
   • Training of health assistants, field workers and dressers.
   • Need laboratory tests for identification of organisms
   • Need adequate drug supply.
   • Monitoring supervision and referral.
   • Surveillance by district PBL Ophthalmologist and its team should be done effectively and regularly.

3. Tertiary level.
   • Upgrading of eye bank facilities and eye bank management.
   • Need pathologist, microbiologist, immunologist.
   • Training of ophthalmologists for PKP.
   • Law enforcement concerning with cornea bank act should be implemented by Government.

4. National level.
   • Research work.
   • Proper statistical recording and monitoring.
Viet Nam:

- **Strength:**
  - Existing an eye care network from central to community
  - PEC has been integrated into PHC
  - CHWs have been trained
  - Some center can do smear test and culture test

- **Weakness**
  - Patients are not aware about eye problem
  - Eye drops were abused by the patients themselves
  - Late referral from lower level to higher level
  - Some special eye drops (anti fungal) are not available
  - Laboratory is not set up in every province
  - In tertiary level laboratory technique is not developed and function not very well
  - Lack of instrument for corneal transplant
  - Lack of eye bank
  - Research on microbiology is limited

- **Solutions:**
  - Health education on eye care
  - Better control antibiotic and steroid eye drop (new law for example)
  - Training more CHW on PEC
  - Develop microlab in the tertiary and secondary levels
  - Establish eye bank
  - Equip specific equipment for corneal transplant in tertiary level
The Matrix on Ocular Infection Management

1. Problem identification

<table>
<thead>
<tr>
<th>Level of eye facility</th>
<th>Quality of eye care</th>
<th>Present situation</th>
<th>Problem identified</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>Self eye care (by people themselves)</td>
<td>(*) 1. 2. 3. 4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health centre</td>
<td>Auxiliary eye care (by non-medical)</td>
<td>1. 2. 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community hospital</td>
<td>Medical eye care (by ophthalmic medical officer)</td>
<td>(**)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provincial hospital</td>
<td>Specialized eye care by ophthalmologist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Hospital</td>
<td>Specialized eye care by ophthalmologist</td>
<td></td>
<td>(*** )</td>
<td></td>
</tr>
</tbody>
</table>

Sample

(*) In general people are not much aware of living style and cleanness poor personal hygiene. Community environment is also poor. Slow action when anything happens with the eye, e.g. minute corneal injury. PH workers lack proper training in eye care.

(**) Eye care quality is rather poor because of staff lack proper training. No adequate drug.

(*** ) No drug available for fungal infection. Therapeutic keratoplasty is not available. Therapeutic contact lens is not available. Very poor laboratory facility without culture.
## 2. Eye care network

<table>
<thead>
<tr>
<th>Level of eye facility</th>
<th>Quality of eye care</th>
<th>Present situation</th>
<th>Minimum service Activity needed</th>
<th>Minimum facility developed</th>
<th>Supplies and equipment necessary for support</th>
<th>Training need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>Self eye care (by people themselves)</td>
<td>To know this is infection and seek for immediate help</td>
<td></td>
<td>Eye drop and ointment (specify the drugs)</td>
<td>To strengthen health education, booklet, poster</td>
<td></td>
</tr>
<tr>
<td>Health centre</td>
<td>Auxiliary eye care (by non-medical)</td>
<td>To recognize this is an infection. To give first aid and refer to the higher level after adequate management</td>
<td></td>
<td>Eye drop and antibiotics preparations (specify the drugs)</td>
<td>Additional hours to PEC refresher course</td>
<td></td>
</tr>
<tr>
<td>Community hospital</td>
<td>Medical eye care (by ophthalmic medical officer)</td>
<td>To recognize this is a serious infection. To give first aid and refer to the higher levels after adequate management</td>
<td>Smear Sensitivity test</td>
<td>Antibiotics eye drop, ointment, oral/injection (specify the drugs)</td>
<td>Additional hours to PEC refresher course</td>
<td></td>
</tr>
<tr>
<td>Regional Hospital</td>
<td>Specialized eye care by ophthalmologist</td>
<td>Identify causative agent. Adequate management for preventing serious complications Therapeutic keratoplasty</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 3. Surveillance and recording and reporting system

<table>
<thead>
<tr>
<th>Level</th>
<th>Responsible body</th>
<th>R/R system</th>
<th>Surveillance system</th>
<th>The use of information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Who collect</td>
<td>Item:</td>
<td>Sentinel</td>
<td>Report:</td>
</tr>
<tr>
<td></td>
<td>Where to be sent</td>
<td>What, Where, When, Magnitude, Management, Outcome</td>
<td>Item: Frequency, Weekly, Monthly, Quarterly, Annual</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequency: Weekly, Monthly, Quarterly, Annual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provincial and regional level</td>
<td>The provincial/regional coordination committee are responsible for data collection and report to the central level. Technical interpretation must be added.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National level</td>
<td>Provincial/regional coordinating committee are responsible to report to the central coordinating committee. The report is then submitted to the PBL national committee with data interpretation and conclusions/recommendation.</td>
<td></td>
<td></td>
<td>To be presented in academic meeting regularly</td>
</tr>
</tbody>
</table>
### The Matrix on Ocular Infection Management

**Cambodia**

#### 1. Problem identification

<table>
<thead>
<tr>
<th>Level of eye facility</th>
<th>Quality of eye care</th>
<th>Present situation</th>
<th>Problem identified</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>Self eye care (by people themselves) and Health volunteer worker</td>
<td>- Poor hygiene&lt;br&gt; - Not aware of serious problem&lt;br&gt; - Behavior, traditional medicine treatment&lt;br&gt; - Self treatment&lt;br&gt; - Farmer and children at high risk of ocular infection during in harvest</td>
<td>- Poor knowledge and socio economic&lt;br&gt; - Transportation and communication difficulty&lt;br&gt; - No trust in health care and eye care&lt;br&gt; - No protection to mini accident trauma</td>
<td>- Early protection to mini accident injury and infection&lt;br&gt; - Early simple treatment especially in harvest season&lt;br&gt; - Restore trust in health care system</td>
</tr>
<tr>
<td>Health center</td>
<td>Health center staff and auxiliary eye care</td>
<td>- Not sufficient knowledge&lt;br&gt; - Not functioning&lt;br&gt; - No drug available</td>
<td>- Minimal training no budget for refreshment course&lt;br&gt; - No drug&lt;br&gt; - Low salary, no intensive support</td>
<td>- Training health center staff to manage and referral case and refreshment course&lt;br&gt; - Community share by payment for treatment</td>
</tr>
<tr>
<td>Provincial hospital or referral hospital</td>
<td>Specialized eye care by BED or ophthalmologist</td>
<td>- No drug anti fungus, anti viral available&lt;br&gt; - No laboratory, microbiology&lt;br&gt; - Limitation knowledge of BED</td>
<td>- Eye health care low priority&lt;br&gt; - Funding support&lt;br&gt; - Available drug</td>
<td>- Improved funding support from government and patient charity&lt;br&gt; - Provide supplies for microbiology laboratory</td>
</tr>
<tr>
<td>Regional Hospital or National hospital</td>
<td>Specialized eye care by ophthalmologist</td>
<td>- No anti fungus, anti viral drug&lt;br&gt; - No microbiology technician and nursing by patient&lt;br&gt; - No keratoplasty</td>
<td>- Lack of drug&lt;br&gt; - Microbiology not available and lab technician&lt;br&gt; - Limit of ophthalmologist and subspecialty eye care&lt;br&gt; - No eye bank</td>
<td>- Build the reliable support system by using resources of general hospital&lt;br&gt; - Subspecialty eye care&lt;br&gt; - Funding support</td>
</tr>
</tbody>
</table>
2. Eye care network

<table>
<thead>
<tr>
<th>Level of eye facility</th>
<th>Quality of eye care</th>
<th>Present situation</th>
<th>Minimum service Activity needed</th>
<th>Minimum facility developed</th>
<th>Supplies and equipment necessary for support</th>
<th>Training need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>Self eye care (by people themselves)</td>
<td>- Poor hygiene</td>
<td>- To know ocular infection and emergency treatment and know the place for immediate help</td>
<td>- Health center close to people live</td>
<td>- Antibiotic: gentamicin, chloram, tetracyline ointment</td>
<td>- Health education to people</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Not aware of serious problem</td>
<td></td>
<td>- Health volunteer team worker</td>
<td></td>
<td>- Training village volunteer to know ocular infection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Behavior, traditional medicine treatment</td>
<td></td>
<td></td>
<td>- TV advertisement and poster</td>
<td>- Inform to public by field worker</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Self treatment</td>
<td></td>
<td></td>
<td>- Training material</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Farmer and children at high risk of ocular infection during in harvest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health centre</td>
<td>Health center staff</td>
<td>- Not sufficient knowledge</td>
<td>- Health center</td>
<td>- Referral system</td>
<td>- Antibiotic eye drop: Genta, chloram, tetra 1%, Povidone Iodin 5%</td>
<td>- Training PEC and refreshment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Not functioning</td>
<td>- Many private dispensaries</td>
<td>- Intensive support</td>
<td></td>
<td>- Course express on ocular infection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- No drug available</td>
<td>- Staff motivation</td>
<td></td>
<td></td>
<td>- Training private dispensaries and pharmacies staff</td>
</tr>
<tr>
<td>Provincial hospital</td>
<td>Specialized eye care by BED and ophthalmologist</td>
<td>- No drug anti fungus, anti viral available</td>
<td>- Carry on by one BED and 2 nurses</td>
<td>- Smear sensitive test, Gram stain</td>
<td>- Antibacterial drug: Genta, ciprofloxx...</td>
<td>- Upgrade Special training course on ocular infection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- No laboratory, microbiology</td>
<td>- Use laboratory in general hospital</td>
<td>- Culture</td>
<td>- Antifungal drugs: Natamicin, Amphoterecin B</td>
<td>- Training for keratoplasty</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Limitation knowledge of BED</td>
<td>- Therapeutic keratoplasty</td>
<td>- Donation cornea, eye bank from central level</td>
<td>- Antiviral: Zovirax,</td>
<td>- Microbiology training course for lab technician</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Microbiology lab technician</td>
<td></td>
<td>- Microscope for laboratory microbiology</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Material for keratoplasty</td>
<td></td>
</tr>
</tbody>
</table>
| Regional Hospital | Specialized eye care by ophthalmologist | - No anti fungus, antiviral drug  
- No microbiology technician and  
- Nursing by patient  
- No keratoplasty  
- No Subspecialty clinic | - Use laboratory in general hospital  
- Therapeutic Keratoplasty  
- Microbiology lab technician  
- Research  
- Report and surveillance system  
- More ophthalmologist responsible | - Smear sensitive test, Gram stain  
- Culture  
- Eye bank  
- Pathology service  
- Subspecialty cornea service | - Antibacterial drug: Genta, ciproflox...  
- Antifungal drugs: Natamicin, Amphotericin B...  
- Antiviral: Zovirax,  
- Microscope for laboratory microbiology  
- Material for keratoplasty | - Upgrade Special training course on ocular infection  
- Training for keratoplasty  
- Microbiology training course for lab technician  
- Cornea subspecialty training |
3. Surveillance and recording and reporting system

<table>
<thead>
<tr>
<th>Level</th>
<th>Responsible body</th>
<th>R/R system</th>
<th>Surveillance system</th>
<th>The use of information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Who collect</td>
<td>Where to be sent</td>
<td>- Develop data collection sheet:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Where to be sent</td>
<td></td>
<td>- Sentinel</td>
<td></td>
</tr>
<tr>
<td>Provincial and regional level</td>
<td>The provincial/regional coordination committee head of eye unit are responsible for data collection and report to the central level subcommittee for the PBL. Collect the data from health center every month and analysis</td>
<td>Information</td>
<td>- No cornea ulcer</td>
<td>Report:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Item:</td>
<td>- Referral</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Number ocular infection</td>
<td>- Treatment</td>
<td>- Every 3 Monthly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Cornea ulcer (Keratitis)</td>
<td>- Cause</td>
<td>- To central</td>
</tr>
<tr>
<td></td>
<td></td>
<td>From every health center and province:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Every month from HC</td>
<td>- Monthly</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Management treatment</td>
<td>- Monthly</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>and referral</td>
<td>- Monthly</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Result Outcome:</td>
<td>- Monthly</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- No blind</td>
<td>- Monthly</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequency:</td>
<td>- Monthly</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Every month</td>
<td>- Monthly</td>
<td></td>
</tr>
<tr>
<td>National level</td>
<td>Provincial/regional coordinating committee are responsible to report to the central coordinating subcommittee PBL for data interpretation and conclusions/recommendation.</td>
<td>Information</td>
<td>Develop data collection sheet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Item:</td>
<td>- Sentinel</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Number ocular infection</td>
<td>- No cornea ulcer</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Cornea ulcer (Keratitis)</td>
<td>- Referral</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>From every health center and province:</td>
<td>- Treatment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Every month from HC</td>
<td>- Cause from trauma</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Management treatment</td>
<td>- Germ identify</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>and referral</td>
<td>Frequency:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Result Outcome:</td>
<td>- 3 Monthly</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- No blind</td>
<td>Analysis data and set the priority solved the problem</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequency:</td>
<td>- To be presented in academic meeting regularly every 4 month</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Every 3 month</td>
<td>- Find out the weakness and strong</td>
<td></td>
</tr>
</tbody>
</table>
# The Matrix on Ocular Infection Management

## In Lao, PDR

### 1. Problem identification

<table>
<thead>
<tr>
<th>Level of eye facility</th>
<th>Quality of eye care</th>
<th>Present situation</th>
<th>Problem identified</th>
<th>Solution</th>
</tr>
</thead>
</table>
| Community             | Self eye care (by people themselves) | 1. Poor personnel hygiene in community  
2. Low education  
3. Poverty  
4. Use traditional medicine  
5. Lack of water supplies  
6. No latrine  
7. Poor sanitation in community | - Eye care network is not strongly enough yet into community  
- Difficulties of terrain  
- Bad roads condition  
- Difficult to access to eye care services  
- Environment is still not improved  
- Superstition  
- No have essential drugs  
- PEC not strongly integrated in PHC | - Health education for individual and families.  
- Booklets, posters, Sanitation & water supply  
- Training volunteer for community eye health workers  
- Provide essential drug for CEHWs (Tetracycline eo, Tifo ed) |
| Health centre         | Auxiliary eye care (by non-medical) | 1. Lack of personal in eye care  
2. Limitation of Knowledge in PEC  
3. Essential drug still limited  
4. Many fields of works. | - Cannot identify eye problems  
- Referral system is not regularly  
- Especially in server cases on ocular infection  
- Almost staff at the Health centers do not get training in eye care | - Health education, booklet, Poster, Radio, TV, Cassettes Video  
- Provide essential drug for health centers (Tetracycline eo, Tifo ed and etc)  
- Every staff at the health centers should be trained in PEC and they should know how to integrate PEC into PHC.  
- Give the first aid & refer to the higher level. |
| Community hospital (district hospital) | Medical eye care (by ophthalmic medical officer) | 1. Ophthalmic nurse cannot identify the causes of ocular infection  
2. Many field of works  
3. Limitation of essential drugs  
4. Some district do not have ophthalmic nurses  
5. The patients who have ocular infection/cornea ulcer come late to see the ophthalmic nurse | - Poor laboratory  
- Referral system is not so good where do not have MLP in eye care  
- Can not affordable/anti fungal drugs | - Health education  
- Training of staff of health centers  
- Special training course on ocular infection  
- Immediate referral corneal ulcer cases to secondary levels  
- Surveillance, recording & reporting system to provincial level. |
|---|---|---|---|---|
| Provincial hospital (Secondary level) | Specialized eye care by ophthalmologists/basic eye doctor | - Some provinces where do not have ophthalmologist can not identify the causes of ocular infection  
- Very few ophthalmologists at provincial levels treatment  
- Basic eye doctor can not clinically identify the causes of ocular infection  
- Lack of specify eye drop for fungal | - Poor laboratory (smear, Gram stain culture)  
- Expensive cost of anti fungal & antibacterial drugs  
- The cost of Anti fungal drugs is very expensive | - Special training course on ocular infection  
- Continue Health education to public & community  
- Training trainer  
- Provide anti fungal & antibacterial drugs for provincial hospital  
- Needs laboratory to identify the organism (Gram stain, smear & sensitive test)  
- Surveillance, recognizing & reporting to the Center or Regional Hospital |
| Regional Hospital/Ophthalmology Centre level | Specialized eye care by ophthalmologist | - Ophthalmologist can identify the causes of ocular infection  
- Do not have sub special cornea clinic  
- Do not have eye bank yet  
- No have anti fungal drug (Amphotericin B, Natamycin) | - Poor laboratory (smear, Gram stain culture)  
- Expensive cost of anti fungal & antibacterial drugs  
- We received very few donors from abroad | - Continue health education  
- Training for sub special cornea clinic & upgrade on ocular infection treatment & surgical skill PKP  
- Setting up laboratory facility  
- Provide anti fungal & |
2. Surveillance and recording and reporting system

<table>
<thead>
<tr>
<th>Level</th>
<th>Responsible body</th>
<th>R/R system</th>
<th>Surveillance system</th>
<th>The use of information</th>
</tr>
</thead>
</table>

- anti-bacterial drug for regional hospital & center ophthalmology
  - Eye bank facility
| National level | Provincial/regional coordinating committee are responsible to report to the central coordinating committee. The report is then submitted to the PBL national committee with data interpretation and conclusions/recommendation. | bacteria  
- No of patient treat anti viral  
- Etc.  
6. Outcome  
- How many cases had a good treatment  
- How many cases failed post treatment  
- How many cases PKP  
- How many cases enucleations or eviscerations  
- Etc.  
7. Frequency:  
- Every 1 month time  
- Every 4 month time  
- Every year 1 time  
| -One time / year |
The Matrix on Ocular Infection Management
Vietnam

1. Problem identification

<table>
<thead>
<tr>
<th>Level of eye facility</th>
<th>Quality of eye care</th>
<th>Present situation</th>
<th>Problem identified</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>Self eye care</td>
<td>1. Poverty</td>
<td>- Difficult to access to eye care service</td>
<td>- Repeat &amp; repeat health education for families &amp; individual</td>
</tr>
<tr>
<td></td>
<td>(by people themselves)</td>
<td>2. Poor personnel hygiene</td>
<td>- Lack of trained community health workers on eye care</td>
<td>- Training volunteers &amp; CHWs in eye care</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Poor knowledge in eye care</td>
<td>- Not proper use corticoid eye drop</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Lack of clean water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health centre</td>
<td>Auxiliary eye care</td>
<td>1. Lack of staff trained in eye care</td>
<td>- Can not identify eye problem</td>
<td>- Health education</td>
</tr>
<tr>
<td></td>
<td>(by non-medical)</td>
<td>2. Many field of works</td>
<td>- Most of staff were not trained on PEC</td>
<td>- Train HWs on PEC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Limitation of knowledge in primary eye care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community hospital</td>
<td>Medical eye care</td>
<td>1. Lack of eye auxiliary Dr</td>
<td>- No laboratory for agent identification</td>
<td>- Train eye auxiliary doctor</td>
</tr>
<tr>
<td></td>
<td>(by ophthalmic medical officer)</td>
<td>2. Lack of essential equip &amp; drug for eye care</td>
<td>- Not available of antifungal drug &amp; not affordable for it</td>
<td>- Special training course on ocular infection for eye auxiliary doctor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Lack of knowledge in identification of cause of ocular infection (OI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Patients with ocular infection come late</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provincial hospital</td>
<td>Specialized eye care</td>
<td>1. Lack of Ophthalmologist specialized in OI</td>
<td>- Poor laboratory</td>
<td>- Special training course on OI for eye doctor</td>
</tr>
<tr>
<td></td>
<td>by ophthalmologist</td>
<td>2. Difficult to identify the cause of OI</td>
<td>- Can not affordable antifungal drug &amp; its cost is very expensive</td>
<td>Provide specific &amp; antifungal drug</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. No eye bank</td>
<td>- Upgrade laboratory</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Keratoplasty is not developed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Overload of patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Hospital</td>
<td>Specialized eye care</td>
<td>1. No law for human tissue donation</td>
<td>- Propose &amp; set up law of human tissue donation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>by ophthalmologist</td>
<td>2. Laboratory is not developed (microbiology)</td>
<td>- Cooperation with abroad to improve laboratory, technique, provision of cornea</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Difficult to get corneal tissue</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2. Eye care network

<table>
<thead>
<tr>
<th>Level of eye facility</th>
<th>Quality of eye care</th>
<th>Present situation</th>
<th>Minimum service Activity needed</th>
<th>Minimum facility developed</th>
<th>Supplies and equipment necessary for support</th>
<th>Training need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>Self eye care (by people themselves)</td>
<td>- Village health volunteers with very poor knowledge in PEC</td>
<td>- To know this is infection and seek for immediate help</td>
<td></td>
<td>- Eye drop and ointment (specify the drugs)</td>
<td>- To strengthen health education, booklet, poster</td>
</tr>
<tr>
<td>Health centre</td>
<td>Auxiliary eye care (by non-medical)</td>
<td>- No staff responsible for eye care professionally</td>
<td>- To recognize this is an infection.</td>
<td></td>
<td>- Eye drop and antibiotics preparations (specify the drugs)</td>
<td>- Additional hours to PEC refresher course</td>
</tr>
<tr>
<td>Community (by expert)</td>
<td>Medical eye care (by expert)</td>
<td>- A small proportion of district hospital have eye doctor</td>
<td>- To recognize this is a serious infection.</td>
<td></td>
<td>- Anti-biotics eye drop, ointment, oral/injection (specify the drugs)</td>
<td>- Additional hours to PEC refresher course</td>
</tr>
<tr>
<td>Provincial hospital</td>
<td>Specialized eye care by expert</td>
<td>- Very few eye doctor specialized in ocular infection</td>
<td>- Identify causative agent. Adequate management for preventing serious complications</td>
<td></td>
<td>Low cost Anti-bacterial &amp; Anti-fungal drugs</td>
<td>- Special training course on ocular infection (one week)</td>
</tr>
<tr>
<td>Regional Hospital</td>
<td>Specialized eye care by expert</td>
<td>- Have a Department responsive for ocular infection disease</td>
<td>- Identify causative agent. Adequate management for preventing serious complications</td>
<td></td>
<td>Specific Anti-bacterial &amp; Anti-fungal drug</td>
<td>- Special training course on corneal graft and new technique of microscope</td>
</tr>
</tbody>
</table>

- Minimum facility developed:
  - Eye drop and ointment
  - Eye drop and antibiotics preparations
  - Anti-biotics eye drop, ointment, oral/injection
  - Low cost Anti-bacterial & Anti-fungal drugs
  - Therapeutic keratoplasty
  - Almost Provincial hospital can do gram stain & culture
  - Therapeutic keratoplasty
  - Can do gram stain & culture (No microscope)
  - Therapeutic keratoplasty

- Supplies and equipment necessary for support:
  - Eye drop and ointment (specify the drugs)
  - Eye drop and antibiotics preparations (specify the drugs)
  - Anti-biotics eye drop, ointment, oral/injection (specify the drugs)
  - Low cost Anti-bacterial & Anti-fungal drugs
  - Therapeutic keratoplasty
  - Almost Provincial hospital can do gram stain & culture
  - Therapeutic keratoplasty
  - Can do gram stain & culture (No microscope)
  - Therapeutic keratoplasty

- Training need:
  - To strengthen health education, booklet, poster
  - Additional hours to PEC refresher course
  - Additional hours to PEC refresher course
  - Special training course on ocular infection (one week)
  - Special training course on corneal graft and new technique of microscope
3. Surveillance and recording and reporting system

<table>
<thead>
<tr>
<th>Level</th>
<th>Responsible body Who collect Where to be sent</th>
<th>R/R system</th>
<th>Surveillance system</th>
<th>The use of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provincial and regional level</td>
<td>The provincial/regional coordination committee are responsible for data collection and report to the central level. Technical interpretation must be added.</td>
<td>-Information Item:</td>
<td>Quarterly</td>
<td>Report: Quarterly Annual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What</td>
<td>Annual</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Where</td>
<td></td>
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<td></td>
<td></td>
<td>When</td>
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<td></td>
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<td></td>
<td></td>
<td>Magnitude:</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Management</td>
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<td></td>
<td></td>
<td>Outcome:</td>
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<td></td>
<td></td>
<td>Quarterly</td>
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<tr>
<td></td>
<td></td>
<td>Annual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National level</td>
<td>Provincial/regional coordinating committee are responsible to report to the central coordinating committee. The report is then submitted to the PBL national committee with data interpretation and conclusions/recommendation.</td>
<td>-Information Item:</td>
<td>Annual</td>
<td>To be presented in academic meeting regularly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What</td>
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<td>Where</td>
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<td></td>
<td>When</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Who (do)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Magnitude:</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Management</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Outcome:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarterly</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Annual</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## The Matrix on Ocular Infection Management
### Myanmar

1. **Problem identification**

<table>
<thead>
<tr>
<th>Level of eye facility</th>
<th>Quality of eye care</th>
<th>Present situation</th>
<th>Problem identified</th>
<th>Solution</th>
</tr>
</thead>
</table>
| Community             | Self eye care (by people themselves) | 1. Poor personnel hygiene  
2. Inadequate knowledge on eye disease  
3. Use of traditional medicine  
4. Inadequate water supply in central Myanmar  
5. Poor sanitation in community | - Eye care network not enough  
- Lack of health knowledge  
- Improved enough to promote health | - Health education through media, school teacher, volunteers  
- Primary eye care training to volunteers and those who actively take part in welfare of the community and VGO's  
- Improving sanitation and environment  
- Essential drugs to the volunteer workers |
| Health centre         | Auxiliary eye care (by non-medical) | 1. Inadequate knowledge of common eye infection  
2. Limited essential drugs  
3. Less interest in eye care because of inadequate knowledge, drugs and many field works | -                                           |                                                                          |
### 2. Eye care network

<table>
<thead>
<tr>
<th>Level of eye facility</th>
<th>Quality of eye care</th>
<th>Present situation</th>
<th>Minimum service Activity needed</th>
<th>Minimum facility developed</th>
<th>Supplies and equipment necessary for support</th>
<th>Training need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>Self eye care (by people themselves)</td>
<td>Inadequate knowledge about ocular infection and importance of early treatment</td>
<td>To know this is infection and seek for immediate help</td>
<td>Persons who have interest and knowledge of eye care</td>
<td>Eye drop and ointment (specify the drugs)</td>
<td>To strengthen health education, booklet, poster</td>
</tr>
<tr>
<td>Health centre</td>
<td>Auxiliary eye care (by non-medical)</td>
<td>Inability to identify ocular infection</td>
<td>To recognize this is an infection. To give first aid and refer to the higher level after adequate management</td>
<td>Basic eye care rendered by them</td>
<td>- Eye drop and antibiotics - Antibiotics eye drops such as gentamycin, chloramphenicol eye drops or tetracycline eye ointment</td>
<td>Additional hours to PEC refresher course</td>
</tr>
<tr>
<td>Community Hospital</td>
<td>Medical eye care (by ophthalmic medical officer)</td>
<td>Insufficient laboratory diagnostic method</td>
<td>- To recognize this is a serious infection. - To give first aid and refer to the higher levels after adequate management</td>
<td>Smear Sensitivity test</td>
<td>- Antibiotics eye drop, ointment, oral infection - Gentamycin, Chloramphenicol, Quinolone eye drops, Anti-fungal or anti-viral eye drops systemic Antibiotics for</td>
<td>Additional hours to PEC refresher course</td>
</tr>
</tbody>
</table>
| Province Hospital | Specialized eye care by ophthalmologist | Insufficient laboratory diagnostic method  
- Identify causative agent.  
- Adequate management for preventing serious complications  
- Therapeutic Keratoplasty | 1. Anti bacterial  
2. Anti-fungal  
3. Anti-viral  
4. Microscope  
5. Surgical Instruments | Special training course on ocular infection |
---|---|---|---|---|
| Regional Hospital | Specialized eye care by ophthalmologists | Inadequate facility and manpower for corneal transplantation  
- Identify causative agent  
- Adequate management for preventing serious complications  
- Therapeutic Keratoplasty | 1. Microscope  
2. Surgical Instruments New Eye Bank  
3. Essential eye drops and drugs | - Special training course on ocular infection.  
- Hand on training for corneal transplantation and modern management of corneal infections |
3. Surveillance and recording and reporting system

<table>
<thead>
<tr>
<th>Level</th>
<th>Responsible body</th>
<th>R/R system</th>
<th>Surveillance system</th>
<th>The use of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>National level</td>
<td>Provincial/regional coordinating committee are responsible to report to the central coordinating committee. The report is then submitted to the PBL national committee with data interpretation and conclusions/recommendation.</td>
<td>Quarterly Annually</td>
<td></td>
<td>To be presented in academic meeting regularly</td>
</tr>
</tbody>
</table>
# The Matrix on Ocular Infection Management Thailand

## 1. Problem identification

<table>
<thead>
<tr>
<th>Level of eye facility</th>
<th>Quality of eye care</th>
<th>Present situation</th>
<th>Problem identified</th>
<th>Solution</th>
</tr>
</thead>
</table>
| Community             | Self eye care (by people themselves) | 1. Misbelief, negligence, inappropriate self-care  
2. Quack  
3. Self bought drugs  
4. Unable to help one’s self (old people)  
5. No eye protection during work | 1. Lack of knowledge,  
2. Modern eye care is unavailable or hard to access  
3. Availability of uncontrolled dangerous drug  
4. Lack of family or social support  
5. Lack of concern, attitude | 1. Training  
2. Consultation system with specialist  
3. Development of guidelines  
4. Supervision and monitoring by community hospital |
| Health centre         | Auxiliary eye care (by non-medical) | 1. Inappropriate management of cases  
2. No first aid equipment and drug | 1. Lack of knowledge, training  
2. Lack of supply | 1. Training  
2. Consultation system with specialist  
3. Development of guidelines  
4. Supervision and monitoring by community hospital |
| Community hospital    | Medical eye care (by ophthalmic medical officer) | 1. Inappropriate management, too much dependent on provincial hospital  
2. Treatment capacity is limited  
3. Delayed treatment and referral | 1. Lack of knowledge, training  
2. Essential drugs and equipments are unavailable | 1. Training  
2. Consultation system with specialist  
3. Development of guidelines  
4. Supervision and monitoring by provincial/regional hospital |
| Provincial hospital   | Specialized eye care | Limited capacities and facilities | | |


<table>
<thead>
<tr>
<th>Level of eye facility</th>
<th>Quality of eye care</th>
<th>Present situation</th>
<th>Minimum service activity needed</th>
<th>Minimum facility developed</th>
<th>Supplies and equipment necessary for support</th>
<th>Training need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>Self eye care (by people themselves)</td>
<td>1. Common corneal ulcers develop after minor injury during agriculture and factory works 2. Hordeolum and blepharitis</td>
<td>To know this is an infection and seek for immediate help</td>
<td>1. How to manage F.B. First aid for corneal abrasion 2. Hygienic eye care</td>
<td>Chloramphenicol eye drop and ointment Education poster Eye protection devices</td>
<td>To strengthen health education, booklet, poster</td>
</tr>
<tr>
<td>Health centre</td>
<td>Auxiliary eye care (by non-medical)</td>
<td>People coming for first aid and initial treatment Unrecognition of serious cases</td>
<td>To recognize this is an infection. To give first aid and refer to the higher level after</td>
<td>Eye irrigation set Fluorescein strip and cobalt blue penlight Communication</td>
<td>Eye drop and antibiotics preparations Chloramphenicol eye drop and ointment, terramycin ointment Education poster, spot</td>
<td>Additional hours to PEC refresher course</td>
</tr>
<tr>
<td>Regional care by ophthalmologist</td>
<td>Provincial care by ophthalmologist</td>
<td>Community care (by medical officer)</td>
<td></td>
<td></td>
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<td>---------------------------------</td>
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</tr>
<tr>
<td>Specialized eye laboratory</td>
<td>Specialized eye laboratory</td>
<td>Medical eye consultation poster, booklet</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for bacteria</td>
<td>Test for bacteria</td>
<td>Fluorescein strip, cobalt blue, penlight</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smear test</td>
<td>Smear test</td>
<td>To give initial treatment and first aid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antibacterial drug: Amphotericin B</td>
<td>Antibacterial drug: Amphotericin B</td>
<td>Chloramphenicol eye drop, ointment, terramycin ointment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microscope culture/sensitivity test</td>
<td>Microscope culture/sensitivity test</td>
<td>Proparacaine eyedrop</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keratoplasty</td>
<td>Keratoplasty</td>
<td>Additional hours to PEC infection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lab technician assurance for resistant cases</td>
<td>Lab technician assurance for resistant cases</td>
<td>Lab technician assurance for resistant cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Lack of confidence in treatment and managing simple cases**

- To recognize when there is a serious infection.
- To give first aid.
- Manage higher levels after test for bacteria.
- Don't know how to follow up.

**Additional management**

- Additional hours.
- Fluorescein strip, cobalt blue, penlight.
- Chloramphenicol eye drop and ointment, terramycin ointment.
- Proparacaine eyedrop.

**Diagnosis pictures**

- Slitlamp.
- Fluorescein strip.
- Regional care by ophthalmologist.
- Provincial care by ophthalmologist.
- Community care (by medical officer).
- Medical eye consultation poster, booklet.

**To give initial treatment and first aid**

- High percentage of resistant cases.
- Lack of good eye bank support.

**Test for bacteria**

- Smear test.
- Antibacterial drug: Amphotericin B.
- Microscope culture/sensitivity test.
- Keratoplasty.
- Lab technician assurance for resistant cases.

**Antibiotic eye drop, ointment**

- Chloramphenicol eye drop and ointment, terramycin ointment.
- Proparacaine eyedrop.

**Regional care by ophthalmologist**

- Specialized eye laboratory.
- Test for bacteria.
- Smear test.
- Antibacterial drug: Amphotericin B.
- Microscope culture/sensitivity test.
- Keratoplasty.
- Lab technician assurance for resistant cases.

**Provincial care by ophthalmologist**

- Specialized eye laboratory.
- Test for bacteria.
- Smear test.
- Antibacterial drug: Amphotericin B.
- Microscope culture/sensitivity test.
- Keratoplasty.
- Lab technician assurance for resistant cases.

**Community care (by medical officer)**

- Medical eye consultation.
- Fluorescein strip, cobalt blue, penlight.
- Chloramphenicol eye drop, ointment, terramycin ointment.
- Proparacaine eyedrop.

**To give initial treatment and first aid**

- High percentage of resistant cases.
- Lack of good eye bank support.

**Test for bacteria**

- Smear test.
- Antibacterial drug: Amphotericin B.
- Microscope culture/sensitivity test.
- Keratoplasty.
- Lab technician assurance for resistant cases.
### 3. Surveillance and recording and reporting system

<table>
<thead>
<tr>
<th>Level</th>
<th>Responsible body</th>
<th>Where to be sent</th>
<th>R/R system</th>
<th>Surveillance system</th>
<th>The use of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provincial and regional level</td>
<td>The provincial/regional coordination committee are responsible for data collection and report to the central level. Technical interpretation must be added.</td>
<td></td>
<td>Information Item:</td>
<td>Sentinel Item:</td>
<td>Report:</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>Frequency</td>
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<td>What</td>
<td>Weekly</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Where</td>
<td>Monthly</td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>When</td>
<td>Annual</td>
<td>Annual</td>
</tr>
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<td></td>
<td>Magnitude</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provincial/regional coordinating committee are responsible to report to the central coordinating committee. The report is then submitted to the PBL national committee with data interpretation and conclusions/recommendation.</td>
<td></td>
<td>Outcome: Frequency</td>
<td>To be presented in academic meeting regularly</td>
<td></td>
</tr>
</tbody>
</table>
### Group A Community level eye care network development

<table>
<thead>
<tr>
<th>Quality eye care</th>
<th>Present situation</th>
<th>Minimum service activity need</th>
<th>Minimum facility developed</th>
<th>Supplies, equipment necessary for support</th>
<th>Training need</th>
</tr>
</thead>
</table>
| Self eye care    | Lack of eye health knowledge  
. Self treatment  
. Not awareness concern serious eye condition | Eye health education by appropriate media: TV, radio, poster | . Media: Poster TV, Radio, school lesson | Poster  
. Leaflets  
. Speaker, amplifier | Training for health volunteer |
|                  | . Seasonal agriculture injury  
. Delayed presentation for treatment | Protection device  
Increased PEC capacity | . HC close to their home | . Supplies of goggle/Sunglasses | |
|                  | . Unable help oneself (elderly or disabled people) | Home visit by PHC /PEC | . Information system and call center | . Bicycle, Motorcycle | |
| 1st level of referral or health center | . Limitation of eye care knowledge PHC PEC  
. Lack of drug/equipment  
. Poor transportation of referring Limit accessibility | Increased PEC  
. Health education for PEC | . Essential drug: antibiotic  
. Education manual and hand book | | Training PEC |
# Group B: Second and tertiary level of referral

<table>
<thead>
<tr>
<th>Level of Eye Facility</th>
<th>Facility of Eye Care</th>
<th>Present Situation</th>
<th>Minimum Service Activity Needed</th>
<th>Minimum Facility Developed</th>
<th>Supplied and Equipment necessary for support</th>
<th>Training Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provincial Hospital (Secondary level)</td>
<td>Specialized eye care (by ophthalmologists and basic eye doctor)</td>
<td>In adequate ophthalmologist. No Lab. In adequate drugs and instruments.</td>
<td>Proper management for severe ocular infection cases Should able to identify the organism.</td>
<td>Smear, culture and sensitivity test.</td>
<td>Proper lab: equipments, (S.L.E and Microscope, chemical) Adequate antibacterial, anti-fungal, antiviral drugs.</td>
<td>Special training to eye doctors, nurses, and technicians.</td>
</tr>
<tr>
<td>Regional Hospital/Ophthalmology Center</td>
<td>Specialized eye care (by ophthalmologists)</td>
<td>In adequate ophthalmologist s No proper lab.</td>
<td>Same as above+ PKP Can identify the causative organism.</td>
<td>Same as above+ Eye bank</td>
<td>Equipments for eye bank</td>
<td>Special training to ophthalmologists and eye bank staff for P.K.P. Pathologists. Microbiologists.</td>
</tr>
<tr>
<td>Level of eye facility</td>
<td>Quality of eye care</td>
<td>Present situation</td>
<td>Minimum service Activity needed</td>
<td>Minimum facility developed</td>
<td>Supplied and equipment necessary for support</td>
<td>Training need</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
| Ophthalmology        | Sub Specialized eye care (by ophthalmologists) | - No micro. lab  
- No eye bank,  
- Inadequate equipment for eye bank  
- limited anti fungus / viral drugs  
- information system inadequate  
- No regulation of drug control  
- No law on tissue donation.  
No sub specialty unit-cornea.  | - Identify causative agent  
- Adequate management for preventing serious complication.  
- Information Data bank  
- Doing some researches.  
- therapeutic keratoplasty/PRK.  | - Smear Test  
- Sensitive test  
- Immunology /serological test  
- Establishment of eye bank  
- Eye drops (anti fungal , viral) special provision.  
- Standardized information system and surveillance system.  
- Proposal to government to issue regulation of drug control  | - Micro lab equipment and supplies.  
- Eye bank facilities, - Instrument and equipment of PKP.  
- Government Center for drug supplies.  
- Infrastructure for tertiary training Center  | - Special training of Microbiology.  
- Eye bank management.  
- Special training on surveillance  |
Situation of cataract and intervention in Cambodia

National subcommittee for PBL

Situation of Cataract

- Cambodia population: 11.7 M
- Blindness prevalence: 1.2%
- Blinding cataract: 65% main cause of blindness
- Cataract backlog: 80,000
- Annual incidence: 19,500

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract output/year</td>
<td>500</td>
<td>1100</td>
<td>3500</td>
<td>5500</td>
<td>6000</td>
</tr>
<tr>
<td>Cataract surgical rate</td>
<td>50</td>
<td>110</td>
<td>350</td>
<td>550</td>
<td>600</td>
</tr>
<tr>
<td>IOL</td>
<td>0</td>
<td>6.2%</td>
<td>59%</td>
<td>79.7%</td>
<td>83.9%</td>
</tr>
</tbody>
</table>

Situation of Cataract

- Current cataract program
  - Eye care service
  - Outreach service
- Applied standard procedure
  - ECCE and ECCE with IOL

Cataract output from 1992 to 2001

- Constraints
  - Limited network
  - Lack of equipment and fund
  - Patient: fear of surgery, can not afford operation, transportation
  - Lack of staff motivation
**Situation of Cataract**

What will we do for next step?
- Increase output / year: 10000 to 15000 by year 2005
- To achieve this target by:
  - Increase manpower
  - Increase PEC network
  - Maximum utilization the remaining resources
  - Increase outreach activity
  - Seek fund from donor
  - Education

**Quality assessment of cataract service**

- Assessment at regional hospital at Takeo eye hospital:
  - VA pre operation < 3/60
  - 5 day after operation
    - VA post operation:
      - 6/18 to 6/6: 20%
      - 6/60 to 6/18: 55%
      - 3/60 to 6/60: 20%
      - < 3/60: 5%

**Quality assessment of cataract service**

- Apply procedure:
  - ECCE + IOL: 85%
  - No phaco
- Complication rate: 5%

**Quality assessment of cataract service**

- Patient satisfaction: 95%:
  - 53% recommend for other to operate
  - 65% could perform activity

---

*Thank you for your attention*
Quality assessment of cataract service in Lao PDR

**Background:** The major of blindness in Lao P.D.R. is cataract which represents a massive public health and socioeconomic problem in developing countries. Cataract is by far the most common cause of blindness and visual impairment among people all over the world including Lao P.D.R. Delivery of cataract surgery is often difficult because of shortage of manpower and other facilities including poor utilization of existing services. This situation has led to the accumulation of un operated case of cataract in Lao P.D.R.

During 1996CE1999, the cataract intervention program was implemented in 7 selected provinces in Lao P.D.R. Total of cataract operated were nearly 7,000 cases. The evaluation of cataract intervention program was required to assess the surgical results and quality of life outcome in cataract operated in first phase which was conducted in seven provinces: Savannakhet, Champassack, Louangprabang, Vientiane prefecture, Vientiane, Khammouane, Xaiyaboury.

**Purpose:** To evaluation the surgical results and quality of life outcome in cataract operated who were performed in cataract intervention program during 1996CE1999.

**Sample population:** The patients who had been performed cataract operated during 1996CE1999 And lived in Savannakhet, Champassack, Louangprabang, Vientiane prefecture, Vientiane, Khammouane, Xayyaboury provinces. It was nearly 7,000 cases. Sample size requirements were based on estimating prevalence of complications of cataract surgery. The total of required sample size was 490 cases in 7 provinces.

**Method:** A cross sectional population based study was performed in Savannakhet, Champasack, Louangprabang, Vientiane prefecture, Vientiane, Khammouane, Xayyaboury. Visual acuity and eye examination including retinoscopy were performed in a cluster sample of these provinces. The survey was preceded by a pilot study in which operational methods
were refinded and assurance measures were performed. The preoperation of readiness of 17 Lao ophthalmic nurses involved in this program was started at ophthalmological center Vientiane during 24 October 27 April 2000. They were properly trained in health interview principle in community, principle of refractive errors and subjective method including usage of autofractometer. The training course was organized and evaluated by 4 Thai ophthalmic nurses.

The survey field work was conducted by three team during 27 April 5 May 2000. Each team consisted of Local ophthalmologist, ophthalmic nurses, health staff and Thai ophthalmic nurse who was responsible as a supervisor. All of three teams visited the villages to identify cataract operated cases. Visual acuity screening, quality of life (QOL) interviewing and eye examination took place at the village examination sites in three provinces: Savannakhet, Champasack and Louangprabang. A basic eye examination was performed by local ophthalmologist and the Lao ophthalmic nurse, who was a interview, was responsible for post operative refractive status measured by auto-refractometer and quality of life (QOL) interviewing. For 4 provinces we started survey evaluation on December 2000 February 2001. The Lao ophthalmologist and ophthalmic nurses took survey this time. We took the same method in each province.

Result: The total examined population who were perfomed in Savannakhet, Champasack, Louangprabang, Vientiane prefecture, Vientiane, Khammouane, Xayyaboury during 1996-1999.
Table 1 Number of cataract operated who were performed during 1996-1999 by area

<table>
<thead>
<tr>
<th>Province</th>
<th>Target population</th>
<th>Examined population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savannakhet</td>
<td>70</td>
<td>70 (100.00)</td>
</tr>
<tr>
<td>Champasak</td>
<td>70</td>
<td>58 (82.85)</td>
</tr>
<tr>
<td>Louangprabang</td>
<td>70</td>
<td>70 (100.00)</td>
</tr>
<tr>
<td>Xayyaboury</td>
<td>70</td>
<td>68 (97.14)</td>
</tr>
<tr>
<td>Vientiane Prefecture</td>
<td>70</td>
<td>69 (98.57)</td>
</tr>
<tr>
<td>Vientiane</td>
<td>70</td>
<td>70 (100.00)</td>
</tr>
<tr>
<td>Khammouane</td>
<td>70</td>
<td>70 (100.00)</td>
</tr>
<tr>
<td>Total</td>
<td>490</td>
<td>475 (96.93)</td>
</tr>
</tbody>
</table>

Table 2 Analysis of visual acuity post-op cataract operation in 7 provinces on 1996-CE 1999

<table>
<thead>
<tr>
<th>Vision grad</th>
<th>Pre-operative (N=475)</th>
<th>Post-operative (N=475) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/6CE6/18= Good vision</td>
<td>205</td>
<td>43.15</td>
</tr>
<tr>
<td>&lt;6/18CE6/60= Borderline</td>
<td>234</td>
<td>49.26</td>
</tr>
<tr>
<td>&lt;6/60CE3/60= Poor</td>
<td>10</td>
<td>2.10</td>
</tr>
<tr>
<td>&lt;3/60CENOPL= Poor</td>
<td>475</td>
<td>26</td>
</tr>
<tr>
<td>Total=</td>
<td>475</td>
<td>100</td>
</tr>
</tbody>
</table>

# Success Rate = >90%

Table 3 Complication of cataract surgery in the operated eye following cataract surgery at 3CEyears follow-up in community based studies in 7 provinces:

<table>
<thead>
<tr>
<th>Complication of cataract surgery</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>After cataract</td>
<td>32</td>
<td>6.73</td>
</tr>
<tr>
<td>Retinal detachment</td>
<td>6</td>
<td>1.26</td>
</tr>
<tr>
<td>Vitreous loss</td>
<td>13</td>
<td>2.73</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
<td>3.15</td>
</tr>
<tr>
<td>Total:</td>
<td>66</td>
<td>13.87</td>
</tr>
</tbody>
</table>
**Recommendation:**

The preparation of readiness for local team who was responsible in Savannakhet, Champasack, Louangprabang, Vientiane prefecture, Vientiane, Khammouane, Xayyaboury should be more trained especially in refractive errors measuring by subjective method. Because of time imited in schedule training. Some part of the interview format weren út clear and difficult to fill out. It took time approximately 45 minute per case for quality of life interviewing. Most of problem occurred during survey field work were lacked of planning between central team and local teams and affected to the effective of the evaluation of the cataract intervention program. Some of local team should be informed in advance about the details of the program to prepair the readiness to work together. The rainy season, most of local people work in their field and it was difficult to fine the target population.
RESULTS OF RAPID ASSESSMENT OF CATARACT SURGICAL SERVICES IN SOME AREAS THE NORTH AND THE SOUTH OF VIETNAM

Prof. Ton Kim Thanh
Dr. Nguyen Chi Dung
Dr. Pham Ngoc Dong
Dr. Vuong Van Quy et all
National Institute of Ophthalmology- Hanoi

Background
The previous survey in 1995 showed:
- Blindness Prevalence is 1.25%
- Magnitude of Blindness is 950,000
- Low Vision Prevalence is 5.8%
- Magnitude of Low Vision is 4,393,000

Main Causes of blindness:
- Cataract accounts for 70%
- Glaucoma accounts for 6.3%
- Trachoma Corneal Opacity accounts for 5.1%
- Post segment pathology accounts for 4.2%

Methodology of the RACSS
- 6 provinces presenting 6 different ecological areas in Vietnam were chosen
- 30 clusters in each province were randomly chosen
- 60 adults of age 50 and over randomly examined by principle "door to door" in each cluster
- Blindness Definition: VA < 3/60 (with available correction, no pinhole )
- Cataract defined by Red Reflex and Eye fundoscopy has been done for each case with VA <6/18 by the eye Doctors
- Data Analysis was done by WHO software package

Total persons examined in the sample

<table>
<thead>
<tr>
<th>Sex</th>
<th>n sample</th>
<th>%</th>
<th>n examined</th>
<th>%</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2,945</td>
<td>41.03</td>
<td>2,866</td>
<td>41.07</td>
<td>97.02</td>
</tr>
<tr>
<td>Female</td>
<td>4,246</td>
<td>58.97</td>
<td>4,112</td>
<td>58.93</td>
<td>96.84</td>
</tr>
<tr>
<td>North</td>
<td>7,200</td>
<td>100.0</td>
<td>6,978</td>
<td>100.0</td>
<td>96.92</td>
</tr>
<tr>
<td>Male</td>
<td>1,371</td>
<td>38.08</td>
<td>1,309</td>
<td>37.60</td>
<td>95.48</td>
</tr>
<tr>
<td>Female</td>
<td>2,229</td>
<td>61.92</td>
<td>2,172</td>
<td>62.40</td>
<td>95.44</td>
</tr>
<tr>
<td>South</td>
<td>3,600</td>
<td>100.0</td>
<td>3,481</td>
<td>100.0</td>
<td>96.69</td>
</tr>
</tbody>
</table>

Blindness Prevalence (VA<3/60)

In The North Vietnam
1. Bilateral Blind:
   - Males : 81 = 2.83%
   - Female: 222 = 5.40%
   - Total: 303 = 4.34%
2. Unilateral Blind:
   - Males : 223 = 7.76%
   - Female: 342 = 8.32%
   - Total: 565 = 8.10%

In the South VN
1. Bilateral Blind:
   - Males : 41 = 3.13%
   - Female: 170 = 7.83%
   - Total: 211 = 6.06%
2. Unilateral Blind:
   - Males : 149 = 11.38%
   - Female: 246 = 11.33%
   - Total: 395 = 11.35%
Main causes of Blindness (persons)

- The North of VN
  1. Cataract = 66.0%
  2. Post Segment = 13.9%
  3. Glaucoma = 5.3%
  4. Trachoma C.O. = 4.6%
  5. Corneal opac. = 2.3%
  6. Uncorr aphakia = 2.6%
  7. Surgical compl = 2.0%
  8. Other = 3.3%

- The South of VN
  1. Cataract = 75.4%
  2. Post Segment = 9.0%
  3. Glaucoma = 7.1%
  4. Corneal opac. = 2.1%
  5. Surgical compl = 1.9%
  6. Other = 2.6%

Low Vision Prevalence (VA<6/18)

- In The North Vietnam
  1. Bilateral Low Vision:
     - Males = 14.38%
     - Female = 21.98%
     - Total = 18.86%
  2. Unilateral Low Vision:
     - Males = 14.55%
     - Female = 14.18%
     - Total = 14.33%

- In the South VN
  1. Bilateral Low Vision:
     - Males = 21.39%
     - Female = 31.63%
     - Total = 27.78%
  2. Unilateral Low Vision:
     - Males = 18.26%
     - Female = 14.92%
     - Total = 16.17%

Main Causes of Low Vision

- The North of VN
  1. Cataract = 63.0%
  2. Refractive err. = 15.8%
  3. Post Segment = 9.6%
  4. Glaucoma = 2.4%
  5. Trachoma C.O. = 7.1%
  6. Corneal Op. = 2.0%
  7. Uncorr aphakia = 1.7%
  8. Surgical compl = 1.3%
  9. Other = 2.1%

- The South of VN
  1. Cataract = 71.5%
  2. Refractive err. = 13.0%
  3. Post Segment = 6.9%
  4. Glaucoma = 2.4%
  5. Uncorr aphakia = 1.8%
  6. Surgical compl = 1.7%
  7. Corneal Op. = 0.9%
  8. Other = 1.8%

Cataract Surgical Coverage

- In The North Vietnam
  1. C.S.C. (per eyes):
     - Males = 36.5%
     - Female = 31.9%
     - Total = 41.3%
  2. C.S.C. (persons)
     - Males = 55.2%
     - Female = 41.8%
     - Total = 49.5%

- In the South VN
  1. C.S.C. (per eyes):
     - Males = 42.0%
     - Female = 33.6%
     - Total = 35.7%
  2. C.S.C. (persons)
     - Males = 67.7%
     - Female = 51.5%
     - Total = 55.1%

Types of Cataract Surgery

<table>
<thead>
<tr>
<th>Types</th>
<th>North %</th>
<th>South %</th>
<th>Vietnam %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non IOL Surgery</td>
<td>51.4</td>
<td>64.9</td>
<td>58.16</td>
</tr>
<tr>
<td>IOL Surgery</td>
<td>48.6</td>
<td>35.1</td>
<td>41.84</td>
</tr>
<tr>
<td>Couching</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Post-operative V.A. of the operated eyes with available correction or pinhole

<table>
<thead>
<tr>
<th>V.A.</th>
<th>North</th>
<th>South</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good &gt; 6/18</td>
<td>24.1%</td>
<td>74.6%</td>
<td>51.9%</td>
</tr>
<tr>
<td>Poor &lt; 6/60</td>
<td>62.0%</td>
<td>10.9%</td>
<td>33.6%</td>
</tr>
</tbody>
</table>

Major Causes of Poor Visual outcome (V.A. < 6/60)

<table>
<thead>
<tr>
<th>Causes</th>
<th>North</th>
<th>South</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncorrected Aphakia</td>
<td>29.3%</td>
<td>29.4%</td>
<td>29.37</td>
</tr>
<tr>
<td>Surgery Complications</td>
<td>28.3%</td>
<td>32.4%</td>
<td>30.00</td>
</tr>
<tr>
<td>Concurrent causes of BL</td>
<td>42.4%</td>
<td>38.2%</td>
<td>40.62</td>
</tr>
</tbody>
</table>

Use of Spectacles after Cataract surgery

<table>
<thead>
<tr>
<th>Causes</th>
<th>North</th>
<th>South</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using glasses</td>
<td>30.8%</td>
<td>51.4%</td>
<td>41.15%</td>
</tr>
<tr>
<td>Not using glasses</td>
<td>69.2%</td>
<td>48.6%</td>
<td>58.85%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Reasons for not Using Glasses after Cataract surgery

<table>
<thead>
<tr>
<th>Causes</th>
<th>North</th>
<th>South</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasses never provided</td>
<td>26.7%</td>
<td>22.2%</td>
<td>24.9%</td>
</tr>
<tr>
<td>Glasses Lost and Damaged</td>
<td>2.0%</td>
<td>4.2%</td>
<td>2.9%</td>
</tr>
<tr>
<td>No need (IOL implanted)</td>
<td>68.3%</td>
<td>69.4%</td>
<td>68.8%</td>
</tr>
</tbody>
</table>

Place of Cataract Surgery

<table>
<thead>
<tr>
<th>Places</th>
<th>North</th>
<th>South</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Health Centre</td>
<td>10.3%</td>
<td>1.4%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Govt. Hospitals</td>
<td>88.4%</td>
<td>92.6%</td>
<td>90.5%</td>
</tr>
<tr>
<td>Private Practice</td>
<td>1.4%</td>
<td>6.1%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Traditional</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>
Costs of Cataract surgery Provided

<table>
<thead>
<tr>
<th>Costs</th>
<th>North %</th>
<th>South %</th>
<th>Vietnam %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally Free</td>
<td>21.2</td>
<td>17.6</td>
<td>19.4</td>
</tr>
<tr>
<td>Partially Free</td>
<td>33.6</td>
<td>12.2</td>
<td>22.8</td>
</tr>
<tr>
<td>Fully Paid</td>
<td>45.2</td>
<td>70.3</td>
<td>57.8</td>
</tr>
</tbody>
</table>

Barriers to Cataract surgery

<table>
<thead>
<tr>
<th>Barriers</th>
<th>North %</th>
<th>South %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unaware</td>
<td>36.7</td>
<td>34.9</td>
</tr>
<tr>
<td>Can not afford</td>
<td>20.0</td>
<td>24.6</td>
</tr>
<tr>
<td>Old age: no need</td>
<td>19.2</td>
<td>11.0</td>
</tr>
<tr>
<td>No company</td>
<td>6.3</td>
<td>10.3</td>
</tr>
</tbody>
</table>

Barriers to Cataract surgery

<table>
<thead>
<tr>
<th>Barriers</th>
<th>North %</th>
<th>South %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contra-indication</td>
<td>6.3</td>
<td>9.3</td>
</tr>
<tr>
<td>Fear of operation &amp; Loosing sight</td>
<td>4.6</td>
<td>7.5</td>
</tr>
<tr>
<td>Wait for maturity</td>
<td>2.2</td>
<td>0.4</td>
</tr>
<tr>
<td>No services, no information</td>
<td>2.1</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Conclusion

- Blindness Prevalence in the adults of age 50 and over in Vietnam today is 4.91%
- Cataract is still most important cause of Blindness in Vietnam today, it accounts for 66 –75% of all blind
- C.S.C. per eyes is about 31-35% and per persons is 45-55% in Vietnam today
- 51.9% of cataract surgery had a good Vision outcome, but 33.6% still had a poor Vision outcome due to many reasons: concurrent blindness, complications, uncorrected aphakia

Conclusion (continues)

- Mainly cataract surgeries (90.5%) done in the Govt. Hospitals, about 42.2% of them is totally or partially free of charge
- Main Barriers to Cataract surgery are unawareness of curable blinding cataract and not affording of surgery, so that promotion of multi-channel Health education and Mobilization of all social resources should take more important role.
- Within VISION 2020, emphasis need to be placed on solving cataract blindness, increasing access to cataract surgery and improving visual outcomes of cataract surgical service in Vietnam!
Proposed solutions

- Promoting social mobilization of all resources for easier access of the poor to cataract surgery.
- Improving health education through many channels in the community.
- Strengthening the existing PEC network.
- Improving surgical quality through the development of surgical skills of eye surgeons and equipment.
- Developing International and Inter-country cooperation in the BLP Programme.

We sincerely thank

- WHO and Dr. S. Resnikoff for their kindest financial and technical supports to carry out this RACSS in Vietnam
- All other NGO's for their valuable assistances in our Blindness Prevention Programme for many years.
- Sight First Committee and Dr. K. Konyama for the opportunity to attend this workshop.

Thank You for attention!
**No. of Cataract Surgeries performed in Myanmar, 2001**

Trachoma Control and Prevention of Blindness Programme
Department of Health, Ministry of Health, Union of Myanmar

<table>
<thead>
<tr>
<th>Prevention of Blindness programme (12 team)</th>
<th>No. of Surgeries</th>
<th>IOL %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9,069</td>
<td>60%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yangon Eye Hospital</td>
</tr>
<tr>
<td>4,094</td>
</tr>
<tr>
<td>States and Divisional Hospital (24 eye units)</td>
</tr>
<tr>
<td>4,780</td>
</tr>
<tr>
<td>Private Eye Centres (Yangon and Mandalay)</td>
</tr>
<tr>
<td>15,000</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>32,943</td>
</tr>
</tbody>
</table>
Quality assessment of cataract service

Cataract services in Thailand is managed mainly by governmental eye care facilities. We have about 114 health care facilities allocated in every provinces and big cities, every which has an eye clinic as shown in the table. This figures do not included private sectors.

Eye care facility in Thailand:

<table>
<thead>
<tr>
<th>Health care facility</th>
<th>urban</th>
<th>rural</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOPH</td>
<td>9</td>
<td>94</td>
<td>102</td>
</tr>
<tr>
<td>MILITARY</td>
<td>3</td>
<td>+</td>
<td>3+</td>
</tr>
<tr>
<td>UNIVERSITY</td>
<td>8+</td>
<td>-</td>
<td>8+</td>
</tr>
<tr>
<td>Ministry of interior</td>
<td>1</td>
<td>-</td>
<td>1+</td>
</tr>
<tr>
<td>Private</td>
<td>some</td>
<td>some</td>
<td></td>
</tr>
<tr>
<td>total</td>
<td></td>
<td></td>
<td>114+</td>
</tr>
</tbody>
</table>

Eye care personnel

<table>
<thead>
<tr>
<th>By the year 2001</th>
<th>number</th>
<th>In governmental service (data from 88 of 114)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ophthalmologists</td>
<td>625</td>
<td>256</td>
</tr>
<tr>
<td>Eye nurses</td>
<td>307</td>
<td>302</td>
</tr>
</tbody>
</table>

Beside eye care facilities and eye care personnel, there is another important thing that contributes to the success of eye care service is net working and referring system. As many of you have known that primary health care has rooted in Thailand for more than twenty years ago and we have already integrated primary eye care in the system.

Health care structure in each provinces are drafted as follow:
Provincial hospitals, about 93 with eye clinics
(and / or regional hospital)
↓
820 community hospitals in every district
(take care by general physicians who have basic knowledge of eye diseases)
↓
7,800 health centers in every tambon
(run by health personnel)
↓
11,000 village health centers
(located in every villages and run by village health volunteers)

To day this system is strengthen by the last constitution that determine village health centers have to be supported yearly by tax that come through local administrative body at the level of tambon. This highly facilitate the continuous development. This budget can be used in three ways; first for emergency health problems, second continuous human resources development and third for development of village health centers.

These village health centers and village health volunteers are the grass roots of primary health care (together with primary eye care) and the strength of referring system.

These are the prime sites of cases finding. Cataract cases are referred to be operated in eye clinics and the cost of operation is covered by 30 baht scheme of the government policy. Every Thai people should have the basic health insurance by this way.
Quality assessment of cataract service

Indicators:
1. Assess of referring system, effectiveness = number of patients under go surgery / number of patients registered or referred.

2. Time of waiting list for surgery.

3. Quantitative assess of cataract surgery outcome; cataract surgical rate, cataract surgical coverage

Surgical rate (year 2000) 75991/60 million = 1266 / million
Surgical coverage 75991/backlog* 100%
(number of backlog in the year 1996 = 180,000 ) = 42%

Table 2 Eye surgical output in Thailand

<table>
<thead>
<tr>
<th>Surgery</th>
<th>1998 (95 from115)</th>
<th>1999</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>71,354</td>
<td>71,051</td>
<td>75,991</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>3,993</td>
<td>3,993</td>
<td>4,136</td>
</tr>
<tr>
<td>Vitreoretina</td>
<td>5,571</td>
<td>5,571</td>
<td>3,581</td>
</tr>
<tr>
<td>Stabismus</td>
<td>1,376</td>
<td>1,376</td>
<td>1,347</td>
</tr>
<tr>
<td>Keratoplasty</td>
<td>292</td>
<td>292</td>
<td>542</td>
</tr>
</tbody>
</table>

Surgical rate: quantitative assets of output / year = member of cataract operation performed (eyes) or number of patients having a cataract operation (persons) / 1,000,000 inhabitants

Cataract surgical coverage is number of persons or eyes that have received surgery / total number of persons or eyes of estimate backlog in a certain area at a certain period in term of proportion.
4. Qualitative assess of cataract service; sight restoration rate, surgical success rate.

Sight restoration rate is proportion of cataract operation done in a population over a certain period of time that change a blind person to a sighted person;

Success rate; the proportion of cataract operations done in a population over a certain period of time that change a blind eye into a sighted eye.

By this time I have only figure from Udornthani hospital:

<table>
<thead>
<tr>
<th>Quality of visual out come of cataract surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report of cataract surgery in Udonthani hospital</td>
</tr>
<tr>
<td>in the year 2001</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age range (year)</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5’-14</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>15-29</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>30-44</td>
<td>37</td>
<td>19</td>
</tr>
<tr>
<td>45-59</td>
<td>139</td>
<td>178</td>
</tr>
<tr>
<td>60-69</td>
<td>228</td>
<td>299</td>
</tr>
<tr>
<td>70-79</td>
<td>172</td>
<td>191</td>
</tr>
<tr>
<td>Over 80</td>
<td>29</td>
<td>25</td>
</tr>
<tr>
<td>TOTAL</td>
<td>631</td>
<td>720</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1351</td>
</tr>
</tbody>
</table>
Cataract grading of male patients undergone surgery in Udonthani hospital in 2001

<table>
<thead>
<tr>
<th>Male</th>
<th>Grade1</th>
<th>Grade2</th>
<th>GRADE 3</th>
<th>Grade4</th>
<th>Blinding Cataract</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>no. of blinding</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>patients no. of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>eyes</td>
</tr>
<tr>
<td>0-4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5'-14</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>15-29</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>30-44</td>
<td>9</td>
<td>3</td>
<td>8</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>45-59</td>
<td>11</td>
<td>9</td>
<td>42</td>
<td>77</td>
<td>10</td>
</tr>
<tr>
<td>60-69</td>
<td>7</td>
<td>10</td>
<td>58</td>
<td>143</td>
<td>30</td>
</tr>
<tr>
<td>70-79</td>
<td>12</td>
<td>10</td>
<td>60</td>
<td>90</td>
<td>20</td>
</tr>
<tr>
<td>Over 80</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td>total</td>
<td>43</td>
<td>36</td>
<td>180</td>
<td>362</td>
<td>73</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Females</th>
<th>Grade1</th>
<th>Grade2</th>
<th>Grade3</th>
<th>Grade4</th>
<th>Blinding Cataract</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>no. of blinding</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>patients no. of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>eyes</td>
</tr>
<tr>
<td>0-4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5'-14</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>15-29</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>30-44</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>45-59</td>
<td>13</td>
<td>15</td>
<td>56</td>
<td>94</td>
<td>27</td>
</tr>
<tr>
<td>60-69</td>
<td>18</td>
<td>19</td>
<td>83</td>
<td>173</td>
<td>44</td>
</tr>
<tr>
<td>70-79</td>
<td>14</td>
<td>12</td>
<td>64</td>
<td>99</td>
<td>41</td>
</tr>
<tr>
<td>over 80</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>17</td>
<td>5</td>
</tr>
<tr>
<td>total</td>
<td>48</td>
<td>50</td>
<td>215</td>
<td>399</td>
<td>117</td>
</tr>
</tbody>
</table>

Total blind people by cataract grade 4 117 + 73 = 190
Post operation visual acuity in blinding patients

<table>
<thead>
<tr>
<th>Grading</th>
<th>number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gr1</td>
<td>113</td>
</tr>
<tr>
<td>Gr2</td>
<td>54</td>
</tr>
<tr>
<td>Gr3</td>
<td>27</td>
</tr>
<tr>
<td>Gr4</td>
<td>32</td>
</tr>
<tr>
<td>Gr5</td>
<td>1</td>
</tr>
<tr>
<td>total</td>
<td>227</td>
</tr>
</tbody>
</table>

Sight restoration rate \( \frac{(73 + 117) - (32 + 1)}{1351} = 12\% \)

Surgical success rate \( \frac{(362 + 399) - (59 + 41)}{1351} * \% = \frac{761}{100} = \frac{661}{1351} * \% = 50\% \)

Post operation visual acuity

<table>
<thead>
<tr>
<th>Grading</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gr1</td>
<td>403</td>
<td>447</td>
<td>850</td>
<td>62.92%</td>
</tr>
<tr>
<td>Gr2</td>
<td>86</td>
<td>135</td>
<td>221</td>
<td>16.36%</td>
</tr>
<tr>
<td>Gr3</td>
<td>83</td>
<td>97</td>
<td>180</td>
<td>13.32%</td>
</tr>
<tr>
<td>Gr4</td>
<td>39</td>
<td>52</td>
<td>166</td>
<td>7.40%</td>
</tr>
<tr>
<td>total</td>
<td>631</td>
<td>720</td>
<td>1351</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
**Cataract output in Thailand 2001**

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Year 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional &amp; provincial hospitals</td>
<td>55,768</td>
</tr>
<tr>
<td>(Data 76 of 93)</td>
<td></td>
</tr>
<tr>
<td>Hospitals in Bangkok</td>
<td>6430</td>
</tr>
<tr>
<td>(data from 8 of 12)</td>
<td></td>
</tr>
<tr>
<td>University hospital</td>
<td>5614</td>
</tr>
<tr>
<td>(data from 4 of 8)</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>67812</strong></td>
</tr>
</tbody>
</table>

**Eye surgery output in Thailand (data 87 of 114 eye care facilities)**

<table>
<thead>
<tr>
<th>Type of surgery</th>
<th>Year 2001</th>
<th>Cataract with IOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>67,812</td>
<td>66,460 = 98%</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>2,283</td>
<td></td>
</tr>
<tr>
<td>Vitreoretinal surgery</td>
<td>2,131</td>
<td></td>
</tr>
<tr>
<td>Strabismus</td>
<td>848</td>
<td></td>
</tr>
<tr>
<td>Keratoplasty</td>
<td>161</td>
<td></td>
</tr>
<tr>
<td>Oculoplasty</td>
<td>No data</td>
<td></td>
</tr>
<tr>
<td>Trauma</td>
<td>No data</td>
<td></td>
</tr>
</tbody>
</table>

**Laser treatment in Thailand**

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Year 2001</th>
<th>Year 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>University hospitals</td>
<td>3,180</td>
<td></td>
</tr>
<tr>
<td>Regional &amp; provincial hospitals</td>
<td>20,518</td>
<td></td>
</tr>
<tr>
<td>Bangkok hospital</td>
<td>5,178</td>
<td></td>
</tr>
</tbody>
</table>
NGO session
Moderator: Mr. Peter Renew (CBM)

Each NGO working in the sub-region presents own ongoing activities in the sub-region.

1. Seva foundation
   Ms. Dechen Tsering; Program director, Seva Foundation

2. Orbis
   Dr. Richard Millar; Regional consultant, Orbis

3. Iris
   Dr. Bal Kumar K.C.; Iris, Cambodia

4. CBM
   Mr. Peter Renew; Regional representative, CBM

Discussion in country-groups, and in one or two NGO groups.
In order to foster good understanding about the realities of programme implementation and output, between NGOs and National programmes, they had group discussions.
Conclusions and recommendations on ocular infection in Cambodia

The Cambodia National Subcommittee for Prevention of blindness:

Conclusions:
Prevention blindness in Cambodia have set up the top priority for new strategies for the vision 2020 on the manpower development and diseases control program. Ocular infection is main cause of blindness, that we could preventable and avoidable, So our priority is focus on community level of eye care system development.

Recommendations:
1. Community level:
The ocular infection is the main problem for ocular blindness that we could avoid by prevention. So we need:
   - Train volunteer health worker and PEC worker
   - Health education
   - Provide teaching material and transportation facility

2. Provincial level:
   - Special training eye doctor, MLP and laboratory technicians on microbiology
   - Update on ocular infection treatment and surgical skill PKP
   - Need laboratory equipment for smear, culture and sensitive test
   - Need eye drug supplies as: anti fungus, anti viral
   - Develop monitoring and supervision system
   - Surveillance and information system should develop
   - Health education program

3. National and regional level
   - Special training of microbiology
   - Heath education and eye care management for student
   - Establishment of eye bank facilities and eye bank management
   - Special training on surveillance system for all eye care professionals
   - Continuing to Upgrade knowledge for ophthalmologist
   - Establishment of Subspecialty training
   - Doing scientifically Research
   - Need microbiology lab equipment and supplies
   - Need eye bank facility and instruments
Conclusions and recommendations for Laos in management of ocular infection (Lao PDR)

Primary level eye care service
- Health education for individual and families are very important, should be done through repetitive health education to community, school students, health school (poster)
- Sanitation and water supply
- Training volunteer for community eye.
- Provide essential drug for CEHWs to give the first aid and safe the eye.
- Every staff at the health center should be trained in PEC and they should know how to integrated into PHC.

Secondary level eye care service
- Continue health education to public, community etc…
- Training of staff of health center.
- Special training course of ocular infection.
- Provide essential drug in some anti fungal drug for District hospital.
- Immediate referral ocular infection in severest cases to tertiary level.
- Surveillance, recording and reporting system with a responsible body at the provincial level should be set up to collect data, analyse and distribute to the eye care management team both at the local and central level.

Tertiary level of eye care
- Setting up laboratory facility.
- Training for sub special cornea clinic
- Provide anti fungal and anti bacterial drug for provincial and regional hospital.
- Health education
Workshop Recommendations and Conclusions of Vietnamese delegation

1. Ocular infection.
   Especially keratitis and uveitis are common eye problem in Vietnam. It may lead to serious consequences such as corneal blindness and destruction of the eyeball. It needs urgent action to develop an adequate system of comprehensive eye care covering all levels of eye care network. Its management needs updated knowledge and technology not only in ophthalmology but also in microbiology, immunology and pharmacology. The laboratory facilities at the secondary level and tertiary level must be upgraded to cope with wide spectrum of causing agents. Its management also needs some special training on eye bank management and technology of penetrating keratoplasty (PKP) and supply necessary instrumentation for this purpose. Besides that, prevention of ocular infections and their blinding complications plays a very important role. It is necessary to strengthen and develop more PEC network to meet this goal. Eye care information system also must be revised to include new items of ocular infections. At the same time, the proposal to Ministry of Health and government for eye drug control and tissue donation law should be prepared and submitted. Availability of minimum sets of anti-microbiological drug must be assured after the reviewing the current situation.

2. Cataract program.
   The national effort must still be made so that the output can meet the annual requirement. At the same time the cataract surgical outcome should be standardized and improved, for this purpose training of eye surgeons and upgrading cataract instrument and technology should be maintained and developed. Program sustainability is an issue on which cost recovering should be paid more attention. Social mobilization of all resources and international cooperation play a very important role to improving the access of the poor to the cataract surgical service.

3. Refraction system development.
   As discussed in the Hanoi workshop, refraction service should be emphasized in new situation. Refraction service must be established in tertiary and secondary levels. Training on refraction should be promoted, but it is very necessary to have technical and financial assistance from WHO and Tokyo collaborating Center for PBL and others NGOs.

*Conclusion:
   To achieve the goal "Vision 2020" the national effort should be strengthen and emphasized on the main causes of blindness, including cataract, refractive error and ocular infections. The continuing support from WHO, NGOs and inter-country collaboration for the progress of the national program are very important and should be maintained and developed.
Ocular Infection in Myanmar
Conclusions and recommendations

I. Weakness.
1. Lack of health education in the community.
2. Mismanagement of eye infection.
3. Lack of medicine (eg. Anti bacterial, antifungal, and antiviral drugs).
4. Lack of laboratory facilities.
5. Late arrival to the health centers.
6. Indiscriminate use of steroids by the patients.

II. What needs?
1. Community level
   • Health education to the public and PEC workers, village elders, teachers, red cross volunteers, etc...
   • Training of PEC workers.
2. District level
   • Training of health assistants, field workers and dressers.
   • Need laboratory tests for identification of organisms
   • Need adequate drug supply.
   • Monitoring supervision and referral.
   • Surveillance by district PBL Ophthalmologist and its team should be done effectively and regularly.
3. Tertiary level.
   • Upgrading of eye bank facilities and eye bank management.
   • Need pathologist, microbiologist, immunologist.
   • Training of ophthalmologists for PKP.
   • Law enforcement concerning with cornea bank act should be implemented by Government.
4. National level.
   • Research work.
   • Proper statistical recording and monitoring.

Conclusion
"The success of eye infection"
1. Cooperation of the persons of the various levels.
2. Proper eye care and treatment including follow up treatment by trained eye care personels.
3. C.M.E and further research works.
Conclusions and recommendations for Thailand in management of ocular infection

1. Primary prevention is the utmost importance and this should be done through repetitive health education to the public, specific target groups as well as the school students.

2. The nation's newly set up primary care units should be strengthened in primary eye care through training and refresher courses for the various levels of personnel.

3. Delegate more authority to the community hospital level in managing eye cases especially corneal infection which should go together with technology transfer and close monitoring and supervision by the provincial level.

4. Surveillance, recording and reporting system with a responsible body at the provincial level should be set up to collect data, analyse and distribute to the eye care management team both at the local and central level.

5. Upgrading laboratory facilities for scientific microbiology study at all provincial hospitals with quality audition is needed. Utilization of these facilities should be regularly reviewed and feedback.

6. Encouraging more research and development regarding ocular infection especially at the tertiary centers and university hospitals. The socio-cultural behaviors factors that affect the happening of corneal infection should be clearly understood for planning of primary prevention actions.

7. Eye bank is still weak and do not adequately serve the demand. A more combined effort is needed to push and make Eye bank better functioning.
The Report of IAPB Assembly for the Sub-Region of Indochina,
The Region of the Western Pacific
Luangprabang, 8 February 2002.

Reported by:
K. Konyama, M.D., Ph.D., M.P.H.
Department of Ophthalmology
Juntendo University School of Medicine
WHO Collaborating Centre for PBL
Co-Chairman, IAPB Region of the Western Pacific

Introduction
International Agency for Prevention of Blindness (IAPB) had a sub-regional meeting for three member countries, Cambodia, Lao PDR and Viet Nam on 8 February 2002, at Phusi Hotel, Luangprabang, and Lao PDR. The meeting was a special session in the last day of the 4\textsuperscript{th} Inter-country Workshop on Prevention of Blindness where those three countries and two observer countries, Myanmar and Thailand had participated. A group of the international NGOs, working in this sub-region attended the workshop also joined this IAPB meeting.

Dr. Nguyen Chi Dung from Institute of Ophthalmology, Hanoi, was selected to chair the meeting together with Dr. Vithoune Vissonnavong, Vientiane Ophthalmic Centre the co-chairperson. Dr Dung expressed his appreciation for selecting him and apology, on absence of Dr. Ton Thi Kim Thanh. She is the co-chairperson of the IAPB/WPR, supposed to chair the meeting this meeting. Dr. Do Seiha, Cambodia and Dr. Nguyen Xuan Tinh, Viet Nam were selected as reporters.

Dr. Dung made an opening remark and conveyed the messages from Dr. Hugh Taylor, the regional chairperson and Dr. Ton Thi Kim Thanh to welcome all participants and their regret for absence this time.
Agenda for the IAPB meeting

8:30 Registration
Opening remark
Introducing Chairperson and Co-chair person
Select reporters
Introducing participants from three member countries and the delegates international NGOs

Subject 1: Ocular Infection management
8:45 – 9:00 Cambodia Dr. Do Sheiha
9:00- 9:15 Viet Nam Dr. Nguyen Xuan Tinh
9:15 – 9:30 Laos Presentation Dr. Siphetthavong Srisaleumsack

9:30 – 10:00 Coffee break

Subject 2: A glance on trachoma situation
10:00 – 10:15 Cambodia Dr. Ngy Meng
10:15 – 10:30 Viet Nam Dr. Ha Huy Tai
10:30 - 10:45 Laos Dr. Khamkhone Holanouphab

10:45 – 12:00 Discussion

Ocular infections control has many significant points in blindness prevention and eye care. The session discussed on present weakness and the needs to be urgently strengthened in each country. Firstly, corneal ulcer is a common problem to all. Importance of early management was recognised. Action must be started at community. Secondly, in general drugs, such antibiotic preparations are in short at all levels, especially anti-fungal preparations. Thirdly, all levels lack laboratory support and urgent need for a supporting system from the high-level. Routine investigation like, smear, culture and sensitivity tests are not yet practised in some countries. Lastly, it needs strong information system support. All countries lack a working surveillance system. In conclusion, many countries require urgent action upgrading scientific foundation and updated management.

Ophthalmia neonatorum is now rather prevalent in Laos. In general, in most countries no such recording/reporting system is working in general. It therefore, resulted in the overall situation is unclear. Ocular infections must be regarded as a sort of eye injuries and emergency. Management must start at where people are living and working. The management system must be reviewed and give more weight to prevention in the context of Primary Health Care. Attention must be also given to upgrading level of ophthalmic sciences.
Viet Nam has shown its great efforts for long, which had led to the decline of trachoma. It resulted in school eye health no longer requires trachoma programme and replaced by such check-up refractive errors. Moreover, in the sub-region may consider a multi-institute linked study soon in the area of molecular epidemiology of chlamydia, where Chlamydia came from and where it goes? While the condition needs continuous efforts against trachoma complications, like trichiasis correction.

12:00 – 13:00 Lunch

Subject 3: Cataract situation and intervention
13:00 – 13:20 Assessment of quality of cataract programme: Lectured by Dr. Pararajasegaram
13:20 – 13:30 Cambodia Dr. Touk Barang
13:30 – 13:40 Vietnam Dr. Nguyen Chi Dung
13:40 – 13:50 Laos Dr. Siphetthavong Srisaleumsack

13:50 – 14:00 Discussion
Dr. Pararajasegaram gave a lecture that assessing cataract surgery and its outcome. These are similar to process control in manufacturing sector. Input/output assessment needs careful consideration of the production line. He was reminding such a concept of quality control in industrial sector should be introduced. Laos and Viet Nam gave their outcomes of cataract surgery.

Cataract services in these countries participated the meeting aim at establishing a local system to cope with the local needs occurring in individual territory. Therefore, it requires working Primary Eye Care incorporated within Primary Health Care scheme. This strategy seemed to be well retained in three countries. Laotian programmes supported by the South Korean fund channelled by WHO/WPRO had taught local surgeons self-confidence through operation. However, it might need further external financial input for some more time. Thus, creating a local recurrent financial system seems to be the current concern.

14:00 – 14:30 Coffee break