

Lions SaveSight Centre (Singapore)

THE FIRST MANAGEMENT BOARD

The First Management Board of Lions SaveSight Centre (Singapore) was unanimously elected as follows:

Honorary Lion Prof Arthur Lim	- Chairman
Honorary Lion Prof Donald Tan	- Deputy Chairman
PDG Han Thien Fong	- Secretary
Lion Charity Wai	- Assistant Secretary
Lion Ho Lon Gee	- Treasurer
Lion Chiam Soo Lee	- Assistant Treasurer
Lion Yong Chiang Boon	- Director 1
Lion Richard See	- Director 2
Lion Jenny Tan	- Director 3
Lion Dr Ho Ching Lin	- Director 4
Lion Dr Edmund Wong	- Director 5

The Management Board shall appoint the following functional committees in due course:

The Functional Committees

- Members & Public Relations
- Regional & International Relations
- Medical
- Eye Bank
- Education & Counseling
- Diabetic Related
- Finance
- Fund Raising
- Legal Contract & Purchasing
- Constitution & By-Laws
- Research
- Building & Maintenance
- Centre Newsletter

and any other functional committees to make the Centre effective and relevant to Singapore and the Regional Countries. Of course, volunteers are welcomed to sit in any Functional Committees, just contact PDG Han Thien Fong at 94234535.

Lions SaveSight Centre (Singapore)

GENERAL MEMBERSHIP

This Centre is founded by
Lions Club of Singapore (Host)
Lions Club of Singapore Fort Canning
Lions Club of Singapore City
Lions Club of Singapore Metropolitan

And all duly chartered Lions Clubs, who are operating and registered under the Societies Act (Cap311), Singapore are all welcomed to join this Centre as ordinary voting members. All that is required is the Lions Club pass a Club Resolution, signed by Club President or Club Secretary, to endorse and support the Lions SaveSight Centre (Singapore) with a simple majority vote in the Club General Meeting (or alternatively an email resolution). The completed resolution to be sent to PDG Han Thien Fong for due processing.

Any other person who is a non-Lions Club member can join as ordinary non-voting member.

CALENDAR OF EVENTS

- October 8, 2008
- LCI Lions World Service Day
- October 9, 2008
- LCI Lions World Sight Day
- November 2008
- LCI Diabetes Awareness Month
- November 14, 2008
- LCI Application deadline for January 2009 SightFirst grants
- December 7-13, 2008
- LCI Lions Eye Bank Week
- January 2009
- LCI Glaucoma Awareness Month
- January 9, 2009
- LCI Application deadline for Winter 2009 Standard Core 4 and IAG grants
- January 13, 2009
- LCI Melvin Jones Birthday
- March 2009
- LCI Eye Donor Awareness Month
- March 13, 2009
- LCI Application deadline for May 2009 SightFirst Grants
- March 13, 2009
- LCI Lions Day with the United Nations
- April 1, 2009
- LCI 2009 International Hero Awards nominations due
- May 2009
- LCI Recycle for Sight Month
- May 11-17, 2009
- LCI White Cane Week
- June 1, 2009
- LCI Helen Keller Day
- July 1, 2009
- Lions SaveSight Centre (Singapore) 1st Anniversary

**"I appeal to you Lions –
you who have your sight,
your hearing – you who are strong
and brave and kind.**

**Will You
not constitute yourselves
Knights of the Blind
in this crusade
against darkness?"**

- HELEN KELLER
June 30, 1925
9th Lions Clubs International Convention
Cedar Point, Ohio, USA



Sight Conservation

The Lions heard Helen Keller and accepted her challenge.

We implemented hundreds of sight-related projects.

In 1976, Sight Conservation and Work with the Blind became an official activity of Lions Clubs International.

The mission of the Lions Sight Conservation and Work with the Blind program is:

To provide programs and assistance to aid people who are blind and visually impaired, and to work at eliminating preventable and reversible blindness.

Fulfillment of this mission remains a foremost objective among Lions clubs around the world. Lions provide essential services and support people who are blind or visually impaired due to disease, aging, or injury.

"I am your opportunity."

Helen Keller

Fellow Lions,

Come forward, seize the opportunity and join the

LIONS SAVESIGHT CENTRE (SINGAPORE)

be the Knights of the Blind in this crusade against darkness.

All you have to do is to get your Lions Club

to pass a club resolution, with a majority vote, signed by the Club President or Club Secretary to endorse and pledge support for the project.

Nobody will ask you to do more than what you are prepared and want to do.

Let us join hands with

LIONS CLUBS INTERNATIONAL,

Honorary Lion Prof Arthur Lim & Honorary Lion Prof Donald Tan

to conquer darkness, preventable and reversible blindness.

To know more, contact

PDG Han Thien Fong - 94234535



Lions SaveSight Centre (Singapore)

Object

- 1. To establish a centre for the prevention for the blindness with a strong emphasis on the blinding complication of diabetes, known as diabetic retinopathy**
- 2. To develop prevention to other important causes of blindness such as corneal disease, cataract and glaucoma**
- 3. To create care services, education & training, screening & counseling and research to complement current developments in the prevention of blindness**
- 4. To coordinate outreach programs to reach out to the neighboring countries, in Asia and further beyond on the prevention of blindness**
- 5. To establish eye banking and corneal grafting with links to Lions Clubs International and its networks & links on sight conservation and eye banks**
- 6. To attain the above objectives, the Lions Save Sight Centre (Singapore) shall:**
 - a. undertake any activities as are incidental or conducive to the attainment of the above project**
 - b. join or become affiliated to any organization, local or internationally, which would further the cause of the Lions SaveSight Centre (Singapore); and/or**
 - c. raise funds for the above purposes.**



Lions SaveSight Centre (Singapore)

Executive Summary June 2008

Establishing a centre with major prevention of blindness program for
Singapore and Southeast Asia

Professor Arthur Lim, MD (Hon), FRCS

Clinical Professor, Dept of Ophthalmology, National University of Singapore
Founding Director, Eye Clinic Singapura International, Gleneagles Hospital, Singapore
Honorary Lion, Lions Club of Singapore (Host)

MISSION

Singapore has established world-class service and training centre in Singapore National Eye Centre (SNEC) and ocular research in Singapore Eye Research Institute (SERI).

Cost will be a problem and to reduce cost, prevention of blindness program is essential.

This Singapore centre will extend program to help prevention of blindness in Southeast Asia with population of 500 million.

Southeast Asia

The countries in Southeast Asia include:

Brunei	:	1 million
Cambodia	:	14 million
Indonesia	:	235 million
Laos	:	6.5 million
Malaysia	:	27 million
Myanmar	:	55 million
Philippines	:	90.5 million
Singapore	:	4.7 million
Thailand	:	63 million
East Timor	:	1.1 million
Vietnam	:	87 million

(Please note the inclusion of countries in Southeast Asia varies in different organizations.)

OBJECTIVE

1. To establish in Lions SaveSight Centre (Singapore) programs to serve 300,000 patients with diabetes, corneal diseases and glaucoma in Singapore
2. To serve Southeast Asia, 30 million patients with diabetes, corneal diseases and glaucoma

ORGANIZATION AND PEOPLE

Organizations	%
Lions	50
Non-Lion Organizations	
SNEC/SERI	25
Diabetic Society of Singapore	10
Other Organizations	15

Profile of Medical Helpers

1. Eye Surgeons
2. Doctors
3. Nurses
4. Educationists
5. Epidemiologists
6. General Helpers & Volunteers (private individuals)



Lions SaveSight Centre (Singapore) Eye Banking and Prevention of Corneal Blindness Programme

Summary of Programme

The LSSC Eye Banking and Prevention of Corneal Blindness Programme endeavors to contribute significantly to developing the status of eye banking in Asia, integration of standards in eye banking and corneal transplantation and contribute to the prevention of corneal blindness. This will be achieved through a formal collaboration with the Asia Cornea Society (ACS) to form an affiliation of eye banks throughout Asia, and to develop prevention of corneal blindness programmes targeting corneal infections as a major cause of corneal blindness in the region, formation of the Lions Singapore Eye Bank (LSEB) to coordinate Asian corneal grading systems and procurement, and a formal collaboration between LSEB and the Sri Lanka International Eye Bank to promote eye donation and the procurement of corneas for corneal transplantation throughout Asia.

Corneal blindness in Asia

Diseases affecting the cornea are a major cause of blindness worldwide, second only to cataract in overall importance, when various forms of infectious and inflammatory diseases causing corneal scarring and vascularization (such as trachoma and keratomalacia) are considered¹. Current WHO statistics estimate that there are currently 12 million blind due to corneal diseases or ocular surface destruction, most of which occurs in Asia. Corneal disease resulting in corneal scarring is a common cause of both monocular and bilateral blindness in children and young adults, and in some high-risk groups in underdeveloped regions of Asia, the incidence of childhood cornea-related visual loss is 20-times higher than in industrialized countries. Corneal ulceration in developing countries in Asia has only been recently recognized as a "silent epidemic", and corneal scarring, ulceration and perforation from infectious keratitis still remains the major indication for corneal transplantation today in many Asian countries with underdeveloped rural populations, including China and India². Lack of knowledge of the epidemiology of eye infections in Asia, antibiotic susceptibility profiles and a lack of appropriate treatment standards in the region contribute significantly to the burden of corneal blindness from eye infections in Asia².

Role and status of eye banking and corneal transplantation in Asia

Whilst prevention of corneal disease remains the most effective means to reduce the burden of corneal blindness in Asia, the mainstay of treatment for those currently blind from corneal disorders is corneal transplantation. Successful corneal transplantation programmes are totally reliant on adequate access to high quality corneas and the regional status of eye banking programmes, and while eye banking is well-developed in the west, with almost 46,000 transplants performed each year in the United States, and 1,500-2,000 transplants each year in Europe, it is clearly recognized that eye banking activities in developing nations in Africa and Asia are totally inadequate with dealing with the large numbers of corneal blindness in these regions, and the majority of cases of corneal blindness in Asia remain untreated due to lack of donor tissue.

1. Whitcher JP, Srinivasan M, Upadhyay MP. Corneal blindness: a global perspective. *Bulletin of the World Health Organization*, 2001, 79:214-221
2. Witcher, JP, Srinivasan M. Corneal ulceration in the developing world – a silent epidemic. *Brit J Ophthalmol*; Vol 22 (2002)

Deficiencies in eye banking programmes in Asia include religious and social impediments to eye donation, inadequate legislation for tissue and organ donation, and lack of conformity with international standards of eye banking in many Asian countries.

Corneal infections as a major cause of blindness in Asia

Eye infections remain the major indication for emergency corneal transplants in Asia, and can be largely avoided by development of appropriate physician education and clinical guidelines for early diagnosis and medical treatment, and a better understanding of the epidemiology and preventive risk factors for infection, types of infectious organisms and their antibiotic susceptibility and drug resistance profiles in Asia, which greatly differ from the West.

The Asia Cornea Society

To address the various challenges in the treatment of corneal blindness in Asia, the Asia Cornea Society (ACS) was recently formed in 2007, dedicated to alleviation of corneal blindness in Asia through the promotion of corneal education and research, and eye banking initiatives among Asian corneal specialists. The ACS Council, led by its first President, Professor Donald Tan, consists of key opinion leaders in the field of corneal and external eye disease from China, India, Japan, Korea, Taiwan, Philippines and Singapore. The ACS secretariat is located in Singapore at the Singapore National Eye Centre and is funded through the Asia Cornea Foundation (ACF). ACS currently has over 450 corneal specialists, ophthalmologists and scientists from 17 member Asian nations. In addition to organization of a biennial ACS Scientific Meeting to promote networking among corneal physicians, major ACS programmes currently involve establishment of good clinical practice guidelines for the management of Asian corneal diseases, with an emphasis on corneal infections, development of clinical guidelines for corneal transplantation in Asia, and the promotion of eye banking development in Asia with the proposed formation of an Association of Asian Eye Banks to promote eye donation and quality standards in eye banking catering to the specific needs in Asia.

Status of Eye Banking and Corneal Transplantation in Singapore

Corneal transplantation has been sporadically performed in Singapore since the early 1960s, with occasional corneas obtained locally through appropriate organ donation legislation, but with reliance on tissue obtained from the Sri Lanka International Eye Bank (SLIEB) through to the 1980s. In 1991, with the establishment of the Singapore National Eye Centre (SNEC) by Professor Arthur Lim, the Singapore Eye Bank (SEB) was formed. Corneas were initially obtained mainly from SLIEB, Queensland Eye Bank and from US eye banks, with approximately 50 transplants performed yearly. In late 1995, Professor Donald Tan was appointed as the Medical Director of SEB, and local eye donation rates were boosted with the establishment of a Hospital Eye Donation (HEDP) program within the Singapore General Hospital, launched with a series of public awareness eye donation campaigns, which resulted in a 240% increase in cornea donation by 1997, and a second HEDP was subsequently launched at the Tan Tock Seng Hospital which further boosted local donation. In 2004, "opting out" legislation in the form of the Human Organ Transplant Act was passed, which provided for presumed consent for the removal and

transplantation of kidneys, hearts, and livers from Singaporeans and permanent residents who had not objected to organ donation. To date, approximately 250 corneal transplants are performed yearly in Singapore with tissue obtained by SEB. Local donation accounts for approximately 45% of all transplants performed, while 65% of corneas are still sourced from two international eye banks in the US and the Philippines. SEB, a non-profit organization, is partially sponsored by the Ministry of Health and by the SNEC, but remains limited in its ability to procure corneas mainly due to lack of consistent funding which currently only allows for staffing of two eye donation counselors who are only able to provide counseling coverage for approximately 20% of all potential donor deaths occurring in both the Singapore General Hospital and the Tan Tock Seng Hospital.

Proposal for the LSSC Corneal and Eye Banking Programme

LSSC proposes the development of an integrated Asian eye banking programme which involves the following three projects:

1. the affiliation of eye banks throughout Asia through the formation of a proposed Association of Asian Eye Banks (AAEB) in alliance with the Asia Cornea Society
2. the transformation of the current SEB to form the Lions Singapore Eye Bank (LSEB)
3. a formal collaboration between LSEB and the Sri Lanka International Eye Bank to promote eye donation and the quality standards for procurement of corneas for corneal transplantation throughout Asia
4. the development of a comprehensive prevention of blindness programme to reduce corneal blindness from common eye infections in Asia, focusing on collaborative educational and research initiatives, in alliance with the Asia Cornea Society

1. Formation of the Association of Asian Eye Banks (AAEB)

An important goal of the Asia Cornea Society is to enhance the development of eye donation and eye banking practices in Asia, to aid in corneal transplantation programmes throughout Asian countries. Specific strategies planned by ACS include initiatives to provide linkages between Asian eye banks, and to develop educational monographs on quality standards for Asian eye banking practices and Asian donation, and for clinical guidelines on corneal transplantation for the region.

Our LSSC project aims to collaborate with ACS to form a networking affiliation between Asian eye banks, by forming the Association of Asian Eye Banks (AAEB). AAEB will be the vehicle to bring eye banks in the region together to provide for cooperative efforts to enhance and regularize eye banking standards and tissue procurement guidelines throughout Asian countries, promote educational support for eye donation programmes specific to Asian cultures and religions, and initiate tissue-sharing initiatives. It is further proposed that the secretariat of AAEB will be located and funded in Singapore within the premises of LSSC.

2. Formation of the Lions Singapore Eye Bank (LSEB)

We propose that the current Singapore Eye Bank will be subsumed within LSSC, and be transformed into the Lions Singapore Eye Bank (LSEB). With appropriate initial funding by LSSC to enable appropriate hiring of eye banking staff, LSEB will be upgraded to a level of self-sufficiency to enable a 100% local donation rate for all corneal transplants performed in

Singapore, through staff expansion of eye bank counselors, tissue procurement coordinators and eye bank administration.

More importantly, LSEB will act as a role model for Asian eye banking and provide leadership and training for other eye banks in Asia. LSEB will develop regional clinical standards for tissue procurement and distribution, an appropriate regional Corneal Grading System, currently in development for the provision of cost-effective tissue utilization to support the changing trends in new lamellar corneal transplantation in Asia (including anterior lamellar keratoplasty, endothelial keratoplasty and the particular need for tectonic and therapeutic forms of keratoplasty pertinent to the needs of the Asian corneal disease spectrum), and support ACS in the development of specific Asian eye banking and tissue procurement protocols and Asian eye donation programs.

3. Formal collaboration between LSEB and the Sri Lanka International Eye Bank

In the '80s and '90s, the Sri Lanka International Eye Bank (SLIEB) was the leading eye bank in Asia, providing corneas to many Asian surgeons in the region, at a time when eye banking was in its infancy in many Asian countries. With fundamental support by Lions Clubs of Sri Lanka, integral to the success of SLIEB was the unique philosophy of the dominant Buddhist religion in Sri Lanka towards eye donation, coupled with the phenomenal drive and determination of Dr Hudson Silva, who transformed the humanitarian concept of eye donation in Sri Lanka to a national level which today still exists. With the subsequent demise of Dr Silva, however, SLIEB subsequently achieved less prominence in the support of eye donation and corneal transplantation in Asia. Reports of tissue contamination and uncertainty with regards to maintenance of tissue procurement standards surfaced, leading many Asian eye banks and surgeons abandoning SLIEB as a source of tissue for transplantation, as a consequence of the loss of contact with SLIEB administration. Singapore has had a long and fruitful relationship with SLIEB, which started in April 1964, when the Ceylon Eye Donation Society first sent three pairs of eyes to Singapore for transplantation. Since then, during the '80s and '90s, many patients in Singapore received corneas from Sri Lanka, until a severe case of tissue contamination from a Sri Lanka cornea with subsequent endophthalmitis resulted in cessation of tissue requests by Singapore surgeons in 1996. Researchers from the Singapore Eye Research Institute currently still procures research grade corneas from SLIEB for research programs involving the development of new endothelial keratoplasty and femtosecond laser-assisted forms of corneal transplantation, but infected tissue continues to be an issue.

Under the auspices of a new initiative within our LSSC eye banking programme, the Lions Singapore Eye Bank proposes to re-establish contact with SLIEB in the form of a collaboration, in affiliation with ACS, to jointly develop new standard operating procedures and quality standards for corneal procurement for Asian eye banking, inclusive of the introduction of LSEB's new Corneal Grading System. With these standards in place, it is intended that SLIEB will again be the leading centre for tissue procurement and distribution in Asia, and pave the way for other eye banks in the region to develop similar eye donation programmes.

Initial plans are underway for SNEC corneal surgeons and the Singapore Eye Bank team, led by Professor Donald Tan, Director of SNEC and Medical Director of SEB, to Sri Lanka to formally visit SLIEB and the Columbo Eye Hospital in July 2008, for discussions with the key leaders in SLIEB and its governing board, and the ophthalmology leadership of Colombo Eye Hospital. Professor Tan and his team will share the goals and aspirations of LSSC, LSEB and ACS with these leaders in the hope of fruitful new collaborations in eye banking and corneal

transplantation. If successful, this initiative has the potential to transform eye banking in Asia, with SLIEB once again leading the way forward in the promotion of eye donation and the procurement and distribution of corneal tissue throughout Asia, with the impact of significantly contributing to the alleviation of corneal blindness in the region.

4. Formation of the ACS Prevention of Blindness Programme for Corneal Infection – the Asian Corneal Infection Project (ACIP)

A major strategic goal of ACS is to develop a comprehensive educational and research programme to reduce corneal blindness from common eye infections in Asia, which cause corneal infections (also known as infectious keratitis). Whilst the majority of infectious keratitis in the west is caused by infection by bacterial organisms, in Asia, the spectrum of disease appears to be fundamentally different, with fungal and other parasitic infections predominating. Contact lens wear in the wear is a major risk factor in the West. In marked contrast, in Asia, agricultural and urban trauma, as well as poorly diagnosed and inadequately treated infections play a major role in the higher prevalence and increased severity of disease. Treatment of eye infection in the form of antibiotic eyedrops focus primarily on bacterial infections, as major pharmaceutical companies mainly address the infectious disease profile in the West, while the development of antifungal agents are totally neglected, and furthermore, virtually nothing is known about the susceptibility of Asian forms of bacterial eye infections to antibiotics currently available.

Our approach addresses all these key issues by establishment of a jointly developed LSSC-ACS **Asian Corneal Infection Project (ACIP)**. ACIP will be headquartered at LSSC, under the auspices of ACS, and consist of an organization of regional collaborations with major corneal centres in key Asian academic eye institutions, in which corneal specialists and infectious disease experts from countries such as India, China, Taiwan, Philippines, Thailand, etc. will be identified through the ACS council and member networks. In addition, international ocular infectious disease experts outside Asia will be recruited as ACIP advisors to the programme. Several key specialists, both Asian and international as well as several major eye centres in Asia have already been approached and have given support for the project.

ACIP will progress in 3 consecutive major phases. **Phase 1** will be to initially determine the current status in Asia, with regards to prevalence rates, disease severity and epidemiological risk factors for infectious keratitis, microbial patterns of ocular disease, antibiotic usage and resistance patterns and varying standards in medical and surgical treatment modalities currently available. **Phase 2** will focus on initiation of strategic multicentre, prospective clinical and microbiological studies utilizing an evidence-based approach. Based on these 2 phases, **Phase 3** will focus on formulation of good clinical practice guidelines with the regards to the diagnosis, investigation and treatment of ocular infections, coupled with the possibility of launching multicentre clinical trials using the standardized medical and surgical treatment regimes developed.

The ultimate aim of ACIP therefore, will be to significantly enhance our knowledge base of eye infection in Asia, and to transform clinical standards in the approach to the management of infectious keratitis, thus reducing the impact of ocular infections on the burden of corneal blindness in Asia.



Lions SaveSight Centre (Singapore) Prevention of Diabetic Blindness Programme

Summary of Programme

The LSSC will serve an important role as the Centre for a Regional Prevention Of Blindness (POB) programme for Diabetic Eye Disease (DED). Within the Centre, a POB Secretariat will oversee cost-effective educational and patient awareness programmes for early detection and referral of DED patients to appropriate levels of eye care. A model Diabetic Eye Disease Prevention of Blindness Clinic will screen new patients, treat patients who require simple laser, refer complex cases for tertiary level treatment at Singapore National Eye Centre (SNEC) and continue follow-on care of patients who have completed tertiary level treatment. The LSSC will also serve a key role in local and international networking by linking active Lions, patients, patient advocacy groups (eg Diabetic Society of Singapore), primary healthcare/ family physicians, ophthalmologists, major Asian eye centres, and governmental agencies. Singapore will serve as the first model, from which future Centres can be developed in urban areas of regional countries.

Background

Diabetic Eye Disease and Blindness

Diabetes mellitus (DM) affects 180 million people worldwide, much of it in developing countries, and is likely to more than double by 2030 (WHO Fact Sheet 312, 2006). The prevalence of DM varies in different populations, ranging from about 5% to 10% (See Table 1). It is alarming to note that the burden of diabetes is high in the newly industrialized countries in Asia, especially in metropolitan areas. Due to its debilitating effect on both large and small blood vessels throughout the body, complications are protean. These include blindness, kidney failure, heart attacks, strokes, nerve function impairment, diabetic foot ulcers, gangrene and limb amputations. These result in loss of economic output in working-age adults, and financial strain on healthcare resources.

Diabetic eye disease, in particular diabetic retinopathy, is estimated by the World Health Organisation to be the most common cause of newly reported blindness in the working adult population, and the 5th commonest cause of blindness worldwide (4.8%, WHO Global data on visual impairment in the year 2002). It is responsible for approximately 1.8 million blind and 28.6 million cases of low vision worldwide. Even in industrialised countries, with their better established medical and social support infrastructure, vision loss from diabetic retinopathy is a major cause of personal disability and societal economic burden. It is an even bigger problem in rapidly industrialising countries where rising affluence, especially in urban environs, has caused significant dietary and lifestyle changes, yet without the infrastructure of better developed countries to cope with the problem.

Landmark studies such as the Diabetic Retinopathy Study (DRS) and Early Treatment of Diabetic Retinopathy Study (ETDRS) Argon laser photocoagulation, have shown that retinal laser treatment at the appropriate time is successful in reducing the risk of blindness by up to 90% in proliferative disease, and 50% in diabetic macular oedema. In advanced, delayed cases not amenable to laser treatment, vitrectomy surgery can save a proportion of eyes from total blindness, but is less cost-effective.

The Wisconsin Epidemiological Study of Diabetic Retinopathy (WESDR) and other major epidemiological studies have established that systemic control of diabetes, blood pressure, lipids, renal function has a significant effect on diabetic retinopathy, with data suggesting that for every point increase in the Haemoglobin A1c (an indicator of sugar control), there is a concomitant 30% increase in risk of complications such as progression of diabetic retinopathy, heart attacks, strokes etc. This emphasises the importance of a holistic approach in the prevention of blindness from diabetes mellitus, necessitating

screening of the various organ systems affected by diabetes such as the eyes, kidneys, heart, feet, vascular and nervous systems.

In Singapore, approximately one-third ($\frac{1}{3}$) of diabetes care is provided by government-subsidised outpatient polyclinic doctors and two-thirds ($\frac{2}{3}$) by private general practitioners. A comprehensive and efficient government-subsidised outpatient polyclinic primary healthcare system with internal systems to screen patients for diabetic retinopathy, nephropathy, diabetic foot checking, glycaemic, blood pressure and lipid monitoring is currently in place. However, despite siting a polyclinic in every housing estate throughout the island, and the relatively low cost of photographic screening (USD\$4) made available to all patients, a significant percentage of diabetic patients still do not receive adequate diabetic eye screening due to various factors. The preliminary analysis of shortfall in screening rests in the following areas:

1. Patient factors
 - a. Lack of information regarding the importance of screening
 - b. Cost
 - c. Inconvenience of going for eye screening
 - d. Others – cultural, social,
2. Doctor factors
 - a. Perceived reluctance to refer patients to screening centres and associated hospitals for fear of losing patients
 - b. Inadequate lack of information regarding the importance of screening
 - c. Perceived lack of established processes to ensure patients get sent for eye screening
 - d. Others – increased cost to patients with yet one more medical appointment required

The Singapore National Eye Centre, other eye departments within the restructured hospitals and private practice ophthalmologists provide secondary and tertiary level care to patients identified with possible diabetic retinopathy changes on screening. These tertiary level centres have a limited capacity limit to monitor this increasingly large group of diabetic patients, and in addition, it is not cost-effective for only ophthalmologist to be involved in ongoing screening and supervision of well-controlled diabetics who do not need active treatment interventions at all times.

LSSC Concept

The LSSC will function as a Centre to spearhead prevention of blindness in diabetic eye disease, starting in Singapore, and extending to the region. A prime objective is to work in a complementary rather than competitive manner with screening and treatment programmes already in place. In dealing with systemic issues, cooperation with referring polyclinic and private general practitioners to minimise overlap will be emphasized. The LSSC will work closely with the Singapore National Eye Centre and Diabetic Society of Singapore to achieve its objectives.

LSSC Objectives:

1. To set up a Regional centre led by a Prevention of Blindness in Diabetic Eye Disease (POB-DED) Secretariat for development of a cost effective POB-DED programme. The LSSC will serve as a coordinating centre, using Singapore as a model, and then for future establishment of other centres in urbanising Asian countries. It will establish local and international networks with patient advocacy groups, ophthalmologists, primary health care practitioners, Eye Centres, and governmental agencies to advance the aims of the Centre. In Singapore, these would include appropriate departments in the Ministry of Health, College of Family Physicians, Diabetes Society of Singapore.
2. To develop educational and patient awareness programmes for early detection and referral of DED patients after thorough review of the system and identification of patient, physician, cultural and other factors which reduce screening uptake.
3. To screen new cases and refer to appropriate levels of eye care.
4. To provide follow-on, “step-down” care of completed, treated cases from tertiary centres.

5. To screen for other diabetic diseases eg diabetic foot ulcers etc together with Diabetes Society of Singapore.
6. To audit the clinical effectiveness and cost-efficiency of educational, screening and treatment processes through a health services research (HSR) programme. These research activities will provide data that can be evaluated to fine-tune the various processes carried out by the Centre.

Concepts of POB-DED clinic

This clinic will perform different levels of diabetic eye screening.

1. **Primary.** It is anticipated that through enhanced educational efforts by the LSSC, more private general practitioners will refer patients for eye screening. The most cost-effective method will be by retinal photography screening with single field posterior pole through a non-dilated pupil. Patients can also be physically examined by trained personnel to screen for diabetic retinopathy and other common eye diseases.
2. **Secondary.** Patients who have abnormalities noted with diabetic retinal photography screening performed at the outpatient polyclinics or elsewhere will have their retinal photographs interpreted by doctors or other trained health care professionals such as ophthalmic trained nurses or optometrists, with minimal reliance on ophthalmologists, who will generally only play a supervisory or consultative role. When diabetic changes are likely, such cases will be referred for examination at the LSSC. Patients who have completed laser treatment at LSSC or other Eye Departments who need chronic or long-term follow-on care and evaluation will also be screened. Cases requiring laser or other treatments will be referred to SNEC.

The Diabetic Eye Disease Clinic will form an additional satellite clinic of the SNEC's current Diabetic Retinal Service (DRS) clinic system for subsidized patients, and will be run by SNEC. In this model, a significant proportion of new polyclinic patients with government medical subsidies scheduled for the SNEC DRS clinic (which is overloaded) will be instead be channeled to LSSC, to be seen by a more cost-effective team with a holistic approach to screening and referrals for other non eye-related complication. In addition, stable, post-laser patients can also be transferred to LSSC. Additionally, patients referred by private general practitioners for diabetic eye screening can also have initial low-cost photographic screening, followed by eye examination at the LSSC DED Clinic.

Staffing of Diabetic Eye Disease Clinic

To adequately meet the stated objectives, it is estimated that the DED Clinic will initially need 3 Medical Officer grade doctors trained in recognizing the changes in diabetic retinopathy. Trained ophthalmic nurses, paramedical, and administrative staff will assist them. To minimize costs, it is anticipated that specialist Ophthalmologists will play a visiting role, with mainly off-site supervision of the daily screening activities. The SNEC will provide the requisite ophthalmic training of these medical officers, and institute continuing medical education to maintain screening standards. These are detailed in Annex.

Conclusion

As Singapore is relatively small with good transport infrastructure, starting the LSSC as a single centre initially with possible future expansions into the satellite towns or even portable screening by dedicated buses or vans to bring screening closer to the patients is likely to be a feasible concept. Screening would be most cost-effective with digital retinal photography, in which images of screened patients can be transmitted back to a main reading centre for diagnosis. Actual management and treatment of identified retinopathy requiring intervention would be referred to SNEC for laser or surgical management. It is envisaged that with robust education programmes, suitably scaled eye screening, laser treatment, value-added services (eg diabetic foot screening, dietary counseling etc) provided by the Diabetes Society of Singapore, the LSSC will be well-placed to bridge the shortfalls identified currently, and will play a pivotal role in reducing blindness from Diabetic Eye Disease in Singapore and the region in a cost-effective manner. Successful implementation may expand eye diseases screened to include other common blinding conditions such as glaucoma and age-related macular degeneration.

Table 1. Prevalence of Diabetes Mellitus

Thailand	9.6%
Singapore	9.0%
Malaysia	2.8% (rural) – 8.2% (urban)
Indonesia	5.7% - 6.1%
Philippines	5.1%
India	6.36%
China	5.1% (rural) – 7.8% (urban)
USA	6.3%

Table 2. Prevalence of Diabetic Retinopathy among the Diabetic Populations

Thailand	32%
Singapore	21.8%
Malaysia	48.6%
India	10.5% (DM population)
China	34.3%



A High Cost

Diabetes – A World Medical Dilemma

Good management depends on General Practitioners, Nurses and People with Diabetes, not Specialists

CAN SINGAPORE BE AN INTERNATIONAL CENTRE?

Professor Arthur Lim, MD (Hon), FRCS

(A patient with Diabetes)

“When human misery of millions continues to increase in the world at a time when medical progress can control diabetes at low cost, we must press for change, for action.”

Diabetes Kills
Diabetes Cripples
Diabetes Blinds

The insidious might of diabetes continues to leave millions dead or suffering from complications, as if to belittle the medical progress of the 20th century. A unique situation has arisen for doctors around the world to contribute their knowledge and skills to help mankind. We now find ourselves with a window of opportunity to improve the lives of millions of diabetic victims throughout the world in the 21st century.

Last year the World Health Organisation and the International Diabetes Federation predicted that the problem of diabetes would worsen worldwide. The number of diabetics in the world has increased more than seven times in the past 20 years, and there are now about 230 million people suffering from the disease, up from 30 million.

As lifespan increases, the number of people with diabetes would also increase.

The problem has been exacerbated by modernisation, which encourages a sedentary lifestyle with young people spending hours at the computer with little or no exercise. Fast food has become convenient. As a result obesity has become a problem. Hypertension has increased. Asia will not be spared as she becomes more affluent. If nothing is done, millions will suffer from the destruction of the disease throughout Asia in the coming years.

Can we prevent millions from the destruction of diabetes?

The issues are complex. There are numerous problems. What can we do? How can we keep costs low? How do we ensure good outcomes? In this Address, I am not speaking as an eye surgeon; I am speaking as a patient with diabetes.

WHO SHOULD TREAT?

People with Diabetes Meeting

On 14 March 2006, 12 persons with diabetes met. We believe that patients with diabetes will challenge the current practice. Let me address the role of specialists, patients and general practitioners.

Specialists – Hospital Diabetic Centres

The key doctors at hospital diabetic centres are the specialists. The problem is, by the time the patients are referred to the hospital diabetic centres to consult the specialists, it is too late. Furthermore, specialists are usually only knowledgeable about their own specialty and are not necessarily effective in other specialities. My own experience with heart specialists after 10 years is that they are highly competent in their field, but as doctors managing patients with diabetes, they are of little value.

Is this a reflection of failure?

Hospital Diabetic Centres and specialists are effective for treatment of complications of diabetes. Unfortunately, the centres and the specialists are not useful in the early stages of diabetes before the complications emerge as the patients at this stage require education, good control of blood sugar and improvement of lifestyle.

Patients with Diabetes

Patients with diabetes should control their own condition and be in the healthcare team.

This is because the doctor sees the patient once a month or once in six months, but the patient lives with his diabetes every day and every hour.

Costs will be significantly reduced if patients look after themselves. Education on diet, food, weight, exercise and blood sugar is essential and workshops rather than lectures will be more effective at raising awareness.

Success in controlling the spread of diabetes can be achieved by patient education. With modern high-speed communication, patient education can spread rapidly to different areas within the city, an example being the Lions Club in Singapore with 72 branches and 1,700 members. Members with diabetes and those who have close relatives or friends with diabetics can come together and form the nucleus for education.

General Practitioners

For many years, we have debated the role of general practitioners in the 21st century.

With the emergence of diabetes as a major disease affecting every nation, it is now clear that general practitioners play a crucial role in its management.

Nurses and Education: Reduce Costs

It is clear that the cost of education, even if it is offered by doctors who are general practitioners and whose charges are less than the specialists'. For this reason, nurses have become important; some have argued that effective educators need not even be qualified nurses.

Centre for Education

Let us consider the novel approach of creating a centre for education to train nurses, people with diabetes and volunteers to raise awareness of diabetes by giving every patient essential information on diabetes. We need also to inform school children or even pre-school children of the health risks of a sedentary lifestyle, over-eating and fast food. We need to convince the owners of fast food chains to produce food which are safe.

An idea is to extend the Alice Lee School of Nursing and develop a centre for teaching nurses, people with diabetes and volunteers about diabetes. If such a training centre were established, in 5 years' time, it can become model for every nation, for every city, so that the world can benefit.

There are compelling reasons why such a training centre for education should receive our full support. We know from experience that no physical handicap is as destructive as diabetes, which affects the eyes (diabetic retinopathy causing blindness), the heart (causing acute heart attack),

the kidneys (leading to dialysis and kidney transplant), the feet (leading to ulcers, gangrene and amputation) and the brain (leading to stroke).

Prevention – Low Cost

Diabetes can be prevented at low cost, but it requires the concerted effort of healthcare workers. Compared to the millions spent on paraplegia, hearing loss, cancer and renal failure, the prevention of diabetes and its complications has a far higher return on investment in terms of physicians' and patients' satisfaction.

Let us hope that Singapore will set the standard for low cost effective diabetic training centres.

Global Challenge International Challenge

This move should excite everyone for it is about humanity and our willingness to help the less fortunate. It is about human organisation and international co-operation; it is a unique opportunity for doctors, especially general practitioners and nurses, to show the world their ability to tackle the international diabetes epidemic. This move can be very important in our troubled world, which is facing the threats of violence, terrorism and destruction. This movement can become a strong vehicle to foster understanding and promote peace worldwide.

Human Rights

Can it be said that the prevention of diabetes affecting the people of the world is the most important human right?

It will be disappointing if the world fails to move – for what greater value do we have as Lions, doctors, nurses and people with diabetes than to prevent the spread of diabetes and its complications?

Conclusion

“Have we given back enough?”



Glaucoma Blindness

Blindness from Acute Glaucoma can be Prevented

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WHY HAS ACUTE GLAUCOMA ATTRACTED WORLD ATTENTION RECENTLY?

Today, there are 60 million people suffering from glaucoma around the world. Of these, 60 million are blind. Half (3 million) were blinded from closed angle glaucoma. Of these, half (1.5 million) were blinded from acute glaucoma. These figures will increase in the coming years because of the ageing population.

One of the most critical blinding problems in the world is acute primary closed angle glaucoma. We have known for decades that it is a serious condition as the acute attack can be destructive leading to the rapid onset of blindness. We also know that with early diagnosis and treatment, the damage can be minimal. In addition, we have known for decades that laser iridotomy to the fellow eye can prevent blindness in this eye. Yet, blindness from acute glaucoma continues to afflict hundreds of thousands of victims, especially the Chinese.

While blindness can be effectively prevented in acute primary closed angle glaucoma because the severity of symptoms will prompt the patient to seek medical care, primary open angle glaucoma is silent (the condition can only be diagnosed with expensive large-scale screening programs: not cost-effective) and the patient does not know that he is getting blind.

It is therefore essential to educate the public, doctors and healthcare workers about the danger and symptoms of acute primary closed angle glaucoma as it is a major preventable blinding condition.

Never has it been more urgent for us to address this problem to prevent blindness affecting thousands of patients each year.

We must act now.



LIONS SAVE SIGHT CENTRE

The following article presented with the new approach is attached.

The Lions Save Sight Centre should establish an acute closed angle glaucoma development, based on the key points in the presentation, mainly directed at educating the public on acute red eye, acute pain in one eye and acute headache on one side especially when associated with blurred vision:

1. A programme to educate the public through pamphlets, newspapers, TV.
2. Education of optometrists, nurses and healthcare workers in hospitals, polyclinics, general practice and all doctors and personnel in emergency clinics.
3. Education of doctors especially the young doctors dealing with emergencies and the education of ophthalmologists who must be kept informed regarding proper management of acute glaucoma to prevent blindness.

I have repeatedly encountered patients who became blind because of inappropriate or inadequate treatment by ophthalmologists or in eye clinics.

A research information into the latest advances such as lens extraction, iridoplasty and paracentesis in acute glaucoma.

Lions Save Sight Centre should provide approximately 2,000 square feet of space for 2 nurses, 2 part-time consultants and more staff will be required if the clinic becomes more active.