Humanitarian work in Cameroon 2009

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1 Abstract

This was the first time optometry students from Buskerud University College participated in a project in Cameroon. The goal of the project was to make an assessment of needs at the eye department. We got an idea of the present situation and which requirements that can make the work more efficient. During our work we discovered that the staff wanted an introduction to the most common eye pathologies, and we noticed that knowledge about health among the population was low. Because of that we composed information posters, both for the ophthalmic nurses and for the patients. At the hospital we did refractions, participated on outreach camps and school screenings. We also taught refraction techniques to Margaret Bengha from the organisation RECEWAPEC. For the next year's students we have some ideas about how the project should be planned and performed. We think the eye department is well run and efficient with the available resources.

Keywords: Cameroon, Cameroon Baptist Convention, Right to Sight, exchange of knowledge, outreach camps

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5 Introduction

5.1 Motivation

For our main project, the whole group wanted to have an experience of the optometry situation in a country different from Norway. Therefore we applied for the humanitarian work project. In the middle of November we were introduced to the different projects, and it was decided that we were going to a university in Malawi. We were very happy about this, and soon after started the preparations for the trip. Since no group of students had been to Malawi before, we did not know what to expect. Buskerud University College (BUC) had problems communicating with the university in Malawi, the main problem was that they did not respond to e-mails. In January it was decided that we could not go through with this project, so we had to look for other alternatives. In cooperation with Isabelle Hoyaux and Philip McAllister from RTS, we decided that the best alternative was Mbingo Baptist Hospital (MBH) in Cameroon. The departure date was in the end of February, so we did not have much time to make new preparations. This was also a “first time”- project, so we mainly focused on research about Cameroon and the hospital. Cooperation with the hospital was good, and this made the process easier.

Illustration 1*: “Group picture”*

Photo: Elin Silje Helen Jensen

5.2 Cameroon

In 1961 the former French Cameroon and part of British Cameroon merged to form the present country. Cameroon has generally enjoyed stability. The government type is republic, multiparty presidential regime. Their legal system is based on the French civil law system. It accepts compulsory International Court of Justice jurisdiction.

The climate in Cameroon varies with terrain, from tropical along the coast to dry and hot in the north. The capital city, Yaounde, is situated in the Centre Region of the country. [1]

Cameroon has modest oil resources and favourable agricultural conditions. This has made it into one of the countries with the best economies in sub-Saharan Africa. Still, they are facing many of the serious challenges as other underdeveloped countries do. They have a top-heavy civil service and a generally unfavourable climate for business enterprise. International oil and cocoa prices have a significant impact on the economy. [1]

There are two official languages in Cameroon: English and French, but there are also 24 major African language groups. [1]
Cameroon is split into ten provinces, two English speaking regions and eight French speaking regions, but the country is actually made up of over 200 tribes. [2]

For more numbers and facts about Cameroon, (see appendix 5).

5.3 Cooperative partners

5.3.1 VISION 2020

VISION 2020 was launched by World Health Organisation (WHO) in 1999, as a global initiative to eliminate avoidable blindness by the year 2020. During the following years national governments and non-governmental organisations have progressively accepted this initiative as the best approach for improving eye health and preventing blindness. [3]

The strategy of VISION 2020 is built upon the foundation of community participation, and has three essential components

- Training sufficient human resources and securing their availability at the point of need
- Strengthening and optimize use of the infrastructure, both with relation to service units and to the use of appropriate and affordable technology
- Cost effective control and prevention of major blinding diseases and disorders [3]

The VISION 2020 program follows this model

- Bring awareness to eye health professionals and service planners that a lot of blindness is avoidable, and offer a good strategy to achieve this

- National planning to review current eye care activities and resources, and plan future priority actions
- Establish a National VISION 2020 Committee, and prepare a national plan with clearly phased goals
- District involvement to plan and implement VISION 2020 at the community level. With emphasis on which tasks to be carried out, by whom, where and when [3]

5.3.2 Right to Sight

Mission Statement

"To eradicate the global crisis of preventable blindness through the use of proven, leading edge techniques in cost recovery, training and surgical practice." [4]

Right to Sight (RTS) is a non-profit organisation. It was founded by eye surgeon, Dr. Kate Coleman in the Royale College of surgeons in Ireland and launched in March 2006. The goal for RTS is to eliminate preventable blindness in the world. To reach that goal RTS has gathered experts from three different sectors: corporate, eye care and government. [4]

RTS believes that the following elements are crucial to their mission

- Partnerships, especially public-private partnerships in the corporate sector
- Systematic and scalable approaches, especially in relation to refractive error and cataract surgery
- Programmatic innovation
- Coordination and competition to promote best practice [4]

RTS has 20 projects distributed amongst eight African countries and one in India. They mainly focus on research, training, sustainability, partnership and awareness. [4]

RTS Cameroon

There are 51 ophthalmologists in Cameroon, mostly based in Yaounde and Douala. They are all trained outside the country. Cameroon are today doing about 13,000 cataract operations per year, but to satisfy the Vision 2020 goal it should be doing about 50,000 operations per year.

RTS's objective is to improve the quality of the ophthalmic training program. They work to increase the number of surgeons, and to improve the quality of the surgeries. They also work with increasing the subspecialty at the referral hospitals in Yaounde and Douala. [2]

Mbingo Baptist Hospital

The eye department at MBH is today doing about 1,000 cataract surgeries per year. A RTS objective with MBH is to increase the cataract surgery rate from 1,000 per year to 3,750 surgeries per year and to reach an out-patient capacity to 54,000 per year. Another objective is to strengthen the hospitals system and processes, and to create a long term sustainable program of eye care in the North West Province. [2]

5.3.3 Buskerud University College

BUC has contributed to the financing of the project by hiring us students for educational stands. Department for Optometry and Visual Science have contributed with a counsellor, Elin Silje Helen Jensen. BUC also helped with planning the practical aspects of the project.

5.3.4 Cameroon Baptist Convention

The Cameroon Baptist Convention Health Board (CBCHB) was founded over 50 years ago. Being a faith based organisation, CBCHB state that their mission is to provide care to those who needs it as an expression of christian love. Their general strategy has an emphasis on planning, implementation, monitoring and objective evaluation of its programs. The short term goals are focused on HIV/AIDS, malaria, tuberculosis, people with disabilities, infrastructure and support for research. In the beginning the staff was trained outside of Cameroon but today CBCHB educates most of their staff on their Private Training School for Health Personnel. This helps reduce the loss of trained personnel and it is easier to recruit staff when they after ended education can return to their local community. Today CBCHB have facilities in six of ten provinces. It runs a total of five hospitals with an estimated capacity of 900 beds of which three of them have a program for eye care. They also have 23 integrated health centers and 43 primary health centers. The organization distributes pharmaceutics and runs a school for education of health personnel. CBCHB also have a program who offers services for people with various disabilities. [5]

HIV/AIDS programs

The Community HIV and AIDS Education program was started in 1999 by CBCHB as a way to deal with the rising prevalence of HIV and AIDS. In the beginning only a few nurses were trained and employed in the program. As the program grew, volunteers were recruited and trained as AIDS educators. Today the volunteers educates people in a public setting, specially where they are familiar with cultural issues that increases the risk of contracting the disease. [6]

Eye Care program

Of the five hospitals run by CBCHB, three of them offer eye care services. These hospitals are MBH, Banso Baptist Hospital and Baptist Hospital Mutenge. Eye care is also offered at five of the health centers. The overall goal of the eye care program is to eliminate avoidable blindness, in accordance to VISION 2020. CBCHB aims to achieve this goal by offering affordable and accessible services and using existing project to raise awareness about eye care and the services provided by CBCHB. [5]

Today the eye care program offers the following services

- Consultation and treatment of eye diseases
- Outreach camps and school screenings
- Eye surgeries
- Prescription of eye glasses
- Training of medical personnel on eye care

The eye care program employs three ophthalmologists and supporting staff. It has also started an onchocerciasis suppression project, which have reduced blindness in villages where this used to be common.

The eye care program is a part of the services for people with disabilities program. Implemented in this program are also community based rehabilitation services, physiotherapy, orthopedics, a leprosy unit attached to MBH and schools for education of hearing and visually impaired children.

After UN declared 1981 the year of disabled people, CBCHB decided to offer education to visually impaired children as a mean to integrate them into society. In this process the first four years are center-based and are preparing the children to be integrated into regular schools. After the first four years the children return to their local communities and are there integrated in ordinary schools. During this time the pupils are being followed up by staff which provides them with brailed materials and orientating teachers on education of the visually impaired. The goal is that visually impaired children upon graduation shall continue into vocational training and one of the biggest challenges is defining useful careers for the children. Since the start of the program, over 200 children have graduated from the program, mostly from the North-West Province.

5.3.5 Mbingo Baptist Hospital

MBH was started in 1952 as a leprosy settlement and in 1965 it expanded to a full hospital. Today the hospital has a capacity of 250 beds and a trained staff of 400. MBH offers services in the area of dental care, general consultations, x-ray and ultrasound, general and orthopedic surgery, education and training of health personnel, pharmaceutics, physiotherapy and prosthetics, HIV/AIDS prevention and care center and the eye department. [7]

In 1998 the first cataract surgery were performed at MBH, and by the year 2000 the eye department were fully operational. Today the eye department is manned by a staff of two ophthalmologists and eight ophthalmic assistants. There are also receptionists and an administrator. In addition to their work at MBH the ophthalmologist are giving ophthalmology support visits to Douala and Mutenge on a bimonthly basis. [7]

Examinations and treatments

When patients arrive at the eye department, they register at the reception. After registration, the patients undergo an examination which is standardized. In accordance to their clinical guideline this examination should consists of

- Detailed history
- Visual acuity
- Measuring intraocular pressure
- Measuring blood pressure and blood sugar
- Slit lamp examination
- Fundus examination, dilated if indicated by the patients history
- Counselling and conversations with the patient

Illustration 2: *"History room"*

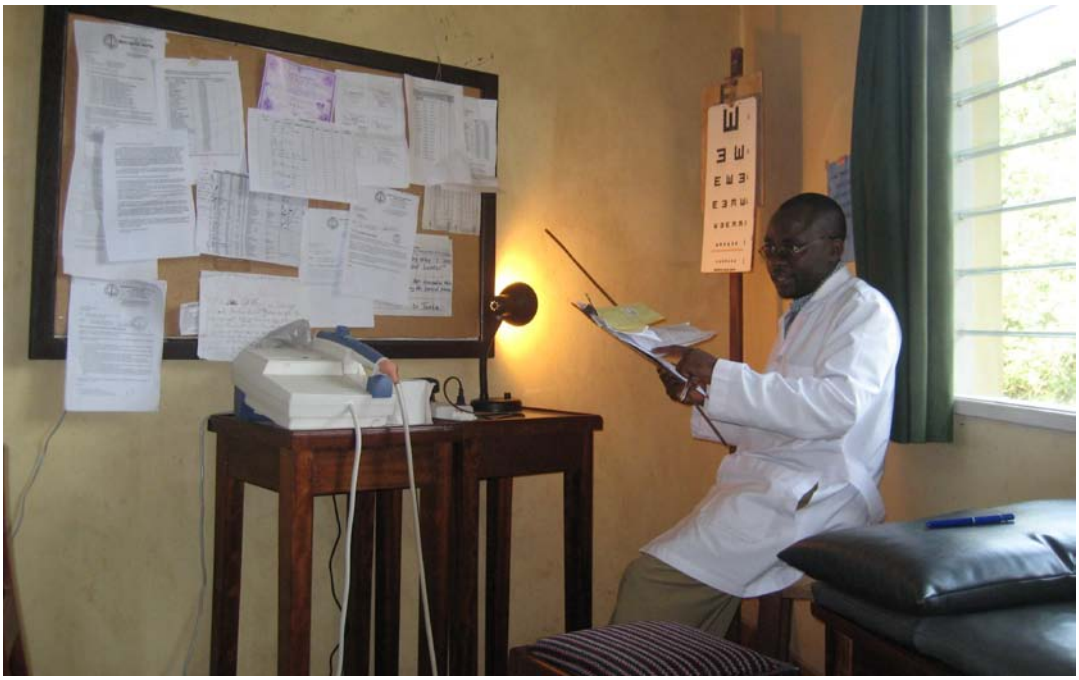


Photo: Marianne Mellem

The eye department performs outreach camps and school screenings in the local community. The school screenings consist of a simple visual acuity test were the screening criteria is 6/12. If a student fails to meet the criteria, he or she is referred to MBH for a more thorough examination. The outreaches are a way for the eye department to reach patients who do not have the time or resources to travel to MBH. Going on outreach camps, staff from the eye department sets up a temporary station where they performs refractions, screens for eye diseases and sell medications for various eye-related diseases and pre-made reading glasses.

The findings in the examination determine the course of treatment for the patient. If operation is required, the eye department is in possession of its own operation theatre, and also has 15 bedposts on the general operation ward.

If the examination detects a need for glasses, the eye department has an optical workshop. Here customers can buy and order glasses which are either pre-fabricated or grinded at the site. For glasses made at the site, the price starts at 20,000 CFA for spherical glasses. The price for a pair of bifocal glasses starts at 27,000 CFA and glasses with a progressive lens design cost from 40,000 CFA. In 2007 the three hospitals with an eye department dispensed 3,195 glasses of which 795 were locally produced, of these 2,314 pairs were dispensed at MBH. [5] A designated member of the staff is trained to grind the lenses for the glasses manually. This way of manufacturing glasses is time consuming and places great demands on the technician. It also makes the dispensing process vulnerable to disease and/or change in staff and the number of glasses manufactured is low.

The optical workshop at MBH is manned by an optical technician that is trained in manual grinding of lenses. The optical technician is also responsible for ordering

the correct lenses that the patient requires. All the lenses they grind have to be ordered from abroad and have a delivery time of 4 weeks. During the period January-October 2008 the optical workshop at MBH dispensed a total of 866 glasses. Of these 276 were produced in the workshop and the rest were readymade. Though the number of glasses dispensed is low compared to western standards, there is still an increase by 157 glasses compared to the same period in 2007. The optical workshop is equipped with a manual grinding stone, some tools (screwdrivers, forceps and various other) and a manual lens meter.

Today three rooms at the eye department are used during a standard examination. The first room is for refraction, measuring blood pressure (BP) and blood sugar and measuring intra ocular pressure (IOP). The equipment consist of

- A test chart for the visual acuity
- A phoropter, trial frames and trial lenses for the refraction
- Equipment for measuring BP and blood sugar
- A Puls Air non-contact tonometer
- Pachymeter for central corneal thickness (CCT) measurement

The eye department's manual archives are also located in this room. Here each patient is given a number which they are sorted by.

The two other rooms are used by the ophthalmologists for slit lamp microscopy (SLM) examination and examination of the fundus. In both these rooms they also have the Goldman tonometer for more precise measurement of IOP if the Puls Air detects abnormal IOP. One of the rooms used by the ophthalmologists is also used for measuring ophthalmic dimensions to use during cataract surgery (biometry). This is achieved by the use of ultrasound. The other ophthalmological office is used for YAG and Diode laser treatment when this is indicated.

If the examination indicates it, the staff has the possibility to perform a visual field examination, with a Goldman perimeter in a separate room. In this room there is also a fundus camera if the staff has the need to document any findings on the retina.

They also have the possibility to perform minor procedures such as removal of foreign bodies or minor surgeries. This is done in a separate room.

5.4 Goal

Main goal

- To accomplish an assessment of needs at the eye department

Subsidiary goals

- Educating the ophthalmic nurses
- Do refractions
- Participate on school screenings and outreach camps
- Support the workshop
- Observe at the operation theater

- Arrange for eventuality next year student group

Long term goal
- To maintain a durable cooperation between MBH and BUC

5.5 Common eye diseases

5.5.1 Global

According to WHO's web page the leading causes of chronic blindness include cataract, glaucoma, age-related macular degeneration, corneal opacities, diabetic retinopathy, trachoma, and eye conditions in children (such as vitamin A deficiency). Age-related blindness and blindness due to uncontrolled diabetes is increasing throughout the world, on the other hand blindness caused by infection is decreasing. WHO states that 75 % of all blindness can be prevented or treated. [8]

WHO's prevention of blindness team assists the Member States to effectively prevent blindness and restore sight, when possible. WHO's global target is to reduce blindness prevalence to less than 0.5 % in all countries, or less than 1 % in any country. The severity of the blindness problem varies dramatically around the world. [8] The prevalence varies for example from 0.2 % in Europe, to 1 % in Africa. [3]

There are two definitions in use for low vision
- Low vision is visual acuity less than 6/18 and equal to or better than 6/120 in the better eye with best correction
- A person with low vision has impairment of visual functioning even after treatment and/or standard refractive correction and has
    - visual acuity of less than 6/18 to light perception
    - visual field less than 10 degrees from the point of fixation [8]

WHO’s international standard diagnostic classification for all diseases called ICD-10 (International Statistical Classification of Diseases and Related Health Problems), is a tool for systematic registration of incidence of diseases. Table 1 shows how to classify visual impairment and blindness. [9]

Table 1: "ICD-10" [10]

Category of visual impairment	Visual acuity with best possible correction	
ICD 10 code	Max. VA	Min. VA
1	6/18	6/60
	3/10 (0.3)	1/10 (0.1)
	20/70	20/200
2	6/60	3/60
	1/10 (0.1)	1/20 (0.05)
	20/200	20/400
3	3/60	1/60 (finger counting at 1 m)
	1/20 (0.05)	1/50 (0.02)
	20/400	5/300 (20/1200)
4	1/60 (finger counting at 1 metre)	Light perception
	1/50 (0.02)	
	5/300 (20/1200)	
5	No light perception	
9	Undetermined or unspecified	

1-2 Visually impaired
3-9 Blind

WHO has estimated that worldwide the number of people with low vision is 124 million, and 37 million people are blind. About a fourth of these would benefit from low vision services. Severe refractive errors account for about 5 million blind people. [8]

Table 2: "Causes of blindness"

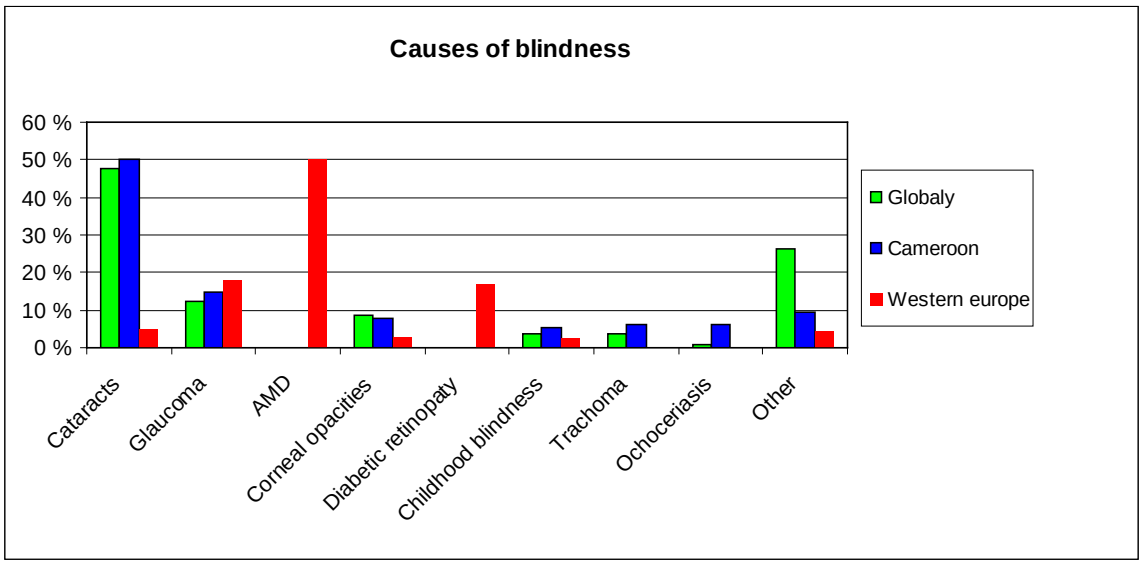


Table 2 shows the distribution of most common causes of blindness divided into Global, Cameroon and Western Europe. The numbers for Cameroon are close to

the global data's, this is due to the fact that you can find 19 % of the worlds blindness in Africa. Western Europe has more resources to cure many of the diseases before they turn into blindness. [11]

5.5.2 At Mbingo Baptist Hospital

The statistics we got from MBH showed us the amount of cataract surgeries in 2007, there were three kinds of surgeries performed. The most prevalent was cataract surgery with insertion of a new intraocular lens on patients over 15 years old. A total of 486 procedures were performed. The other two forms were surgery on children under 15 with and without new intraocular lens. Here the numbers were respectively 21 and 39 surgeries.

Illustration 3 *"Cataract surgery"*

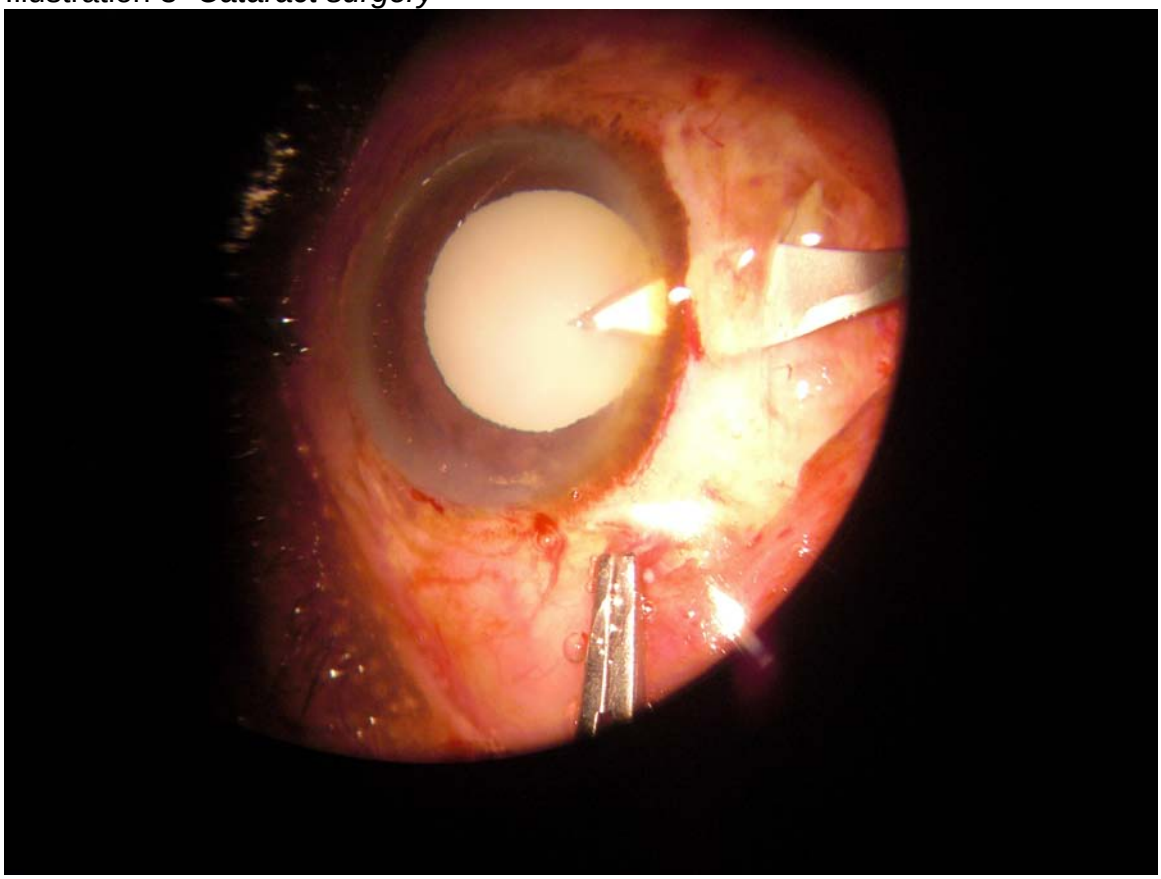
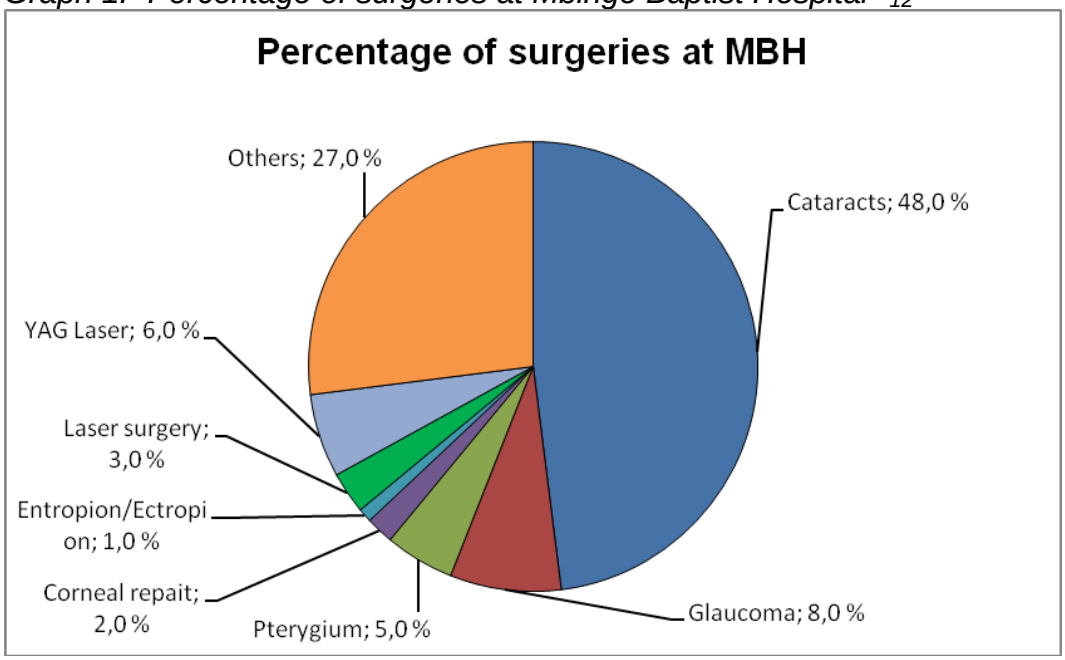


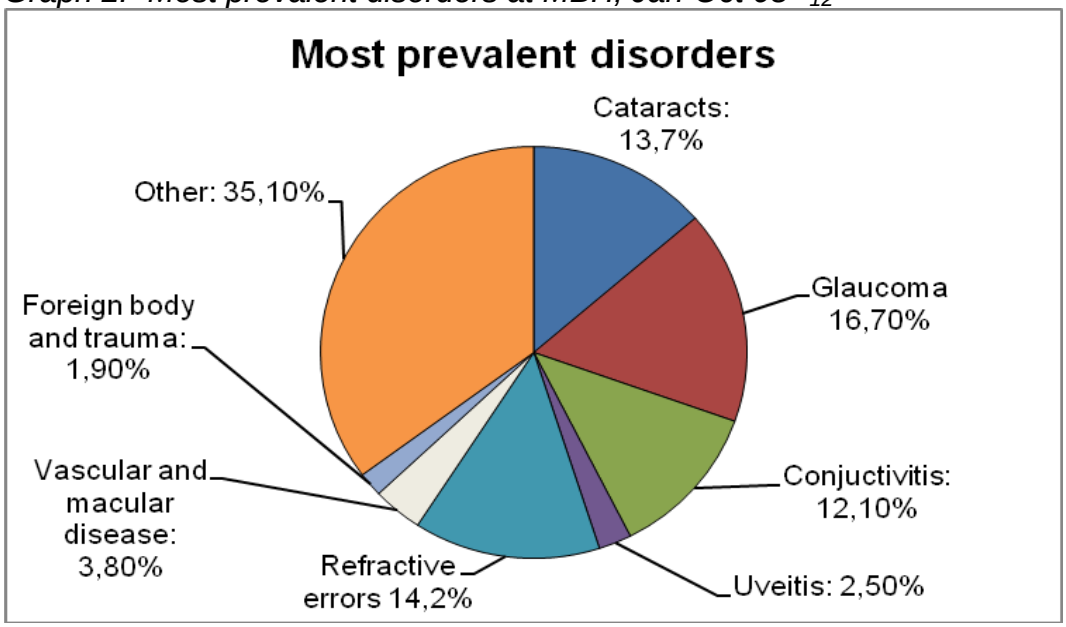
Photo: Tonje Saurdal

Graph 1: "Percentage of surgeries at Mbingo Baptist Hospital" [12]



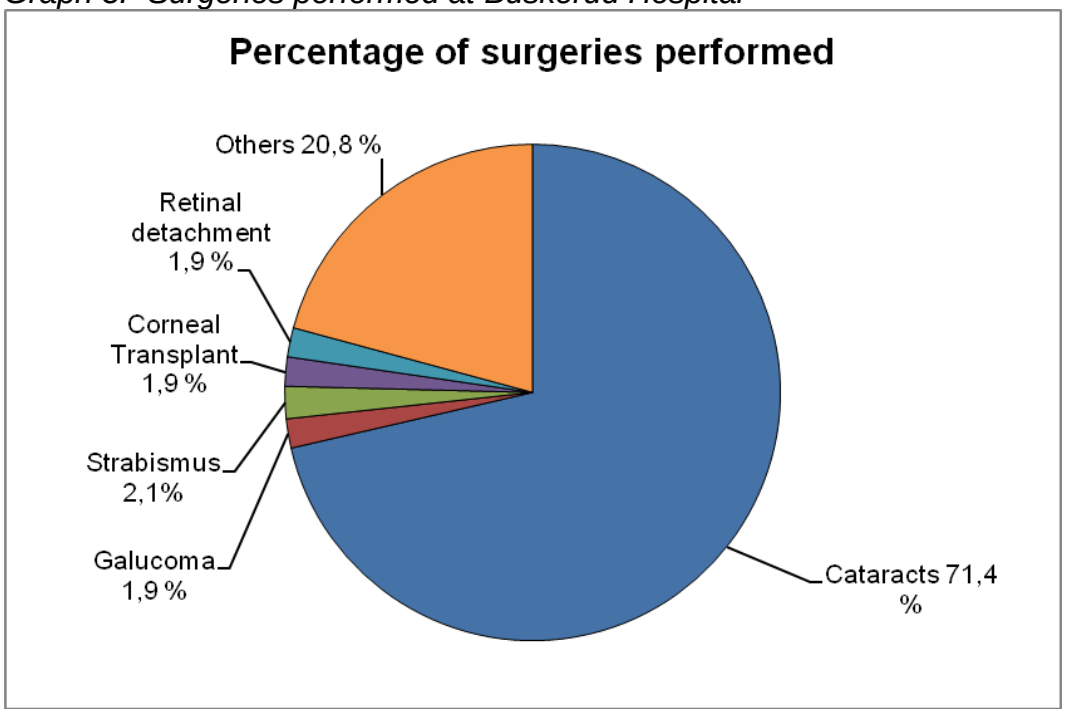
According to MBH's statistics from January to October 2008, the four most common eye conditions (see graph 1) they see at the hospital is glaucoma, refractive errors, cataract and conjunctivitis.

Graph 2: "Most prevalent disorders at MBH, Jan-Oct 08" [12]



In graph 2, other disorders consist of corneal scars, corneal ulcer, pterygium, blepharitis, entropion, ectropion, strabismus, dry eyes among others.

Graph 3: "Surgeries performed at Buskerud Hospital"



This graph shows the annual distribution of the ocular surgeries at Buskerud Hospital. [13] Cataract is the most common surgery performed in Norway, with the number of 45,000 each year. Graph 3 shows that this is also the situation in Buskerud Hospital.[14]

5.5.3 General about common eye diseases

During our stay at the eye department we observed several eye examinations and surgeries. There were three eye conditions that were more common than others, these were cataract, glaucoma and conjunctivitis. For more information, see appendix 6 .

Illustration 4: *"Chalazion surgery"*

Photo: Kristian Brekstad

6 Methods

6.1 Planning

The original plan was to participate on a project in cooperation with a university in Malawi. So a lot of the preparations were related to teaching students. The change of plans made these preparations unfit for use, and we will not go into them more thoroughly. Regarding the hospital, there was no need for us to bring any special equipment, other than our personal retinoscopes, ophthalmoscopes, penlight, cover, pd-ruler and fixation device.

Early in the process we did research on which vaccines required for travelling to Africa. We started the vaccinations in January.

In January our counsellor held three lectures about humanitarian work

- Human rights, humanitarian work and cultural understanding
- Planning in accordance with VISION 2020 strategies
- Area of commitment for VISION 2020

In February we received a course in hygiene from Blefjell Hospital.

Travelling to Cameroon a visa is required, so we had to apply for this through the consulate in Sweden.

6.2 Economy and finances

The economical aspect is a big part of our project. We needed to raise a lot of money to realize our project. Therefore getting sponsors (see appendix 2) and raise money in other means was very important for us. Since we did not know if there would be a humanitarian project or not, our financial planning was postponed to late autumn. Due to the global financial crisis and our late start we had some problems getting enough sponsors. We primarily focused on sponsors from the optic line and big firms nearby Kongsberg. We sent letters (see appendix 4) to potential sponsors that explained our situation and our intention with the project and also a budget (see appendix 3). Each group member also contacted firms from their place of origin.

A budget was made and calculated from earlier humanitarian projects and from estimated flight, vaccination, food and accommodation prices.

We did some voluntary work like washing the school clinic at BUC. We had cooperation with BUC where we participated in several education conventions and promoted BUC.

We were also promoted in two local newspapers, Laagendalsposten and Harstad Tidende.

6.3 Work in Cameroon, expectations

In advance our expectations were related to the work we could perform at the eye department. We expected to do a lot of refractions, and to see pathologies that we never see in Norway. We were prepared to go on outreach camps and school screenings, and to inform the ophthalmic nurses. We were also prepared to work at the workshop, and to teach them techniques there.

7 Results

7.1 Work in Cameroon

The biggest difference between consultations in Cameroon and Norway is the organisation. In Norway you call the office and order an appointment for consultation, and you show up at a particular time. After 30-45 minutes the optometrist has done all the tests, and the conclusion has been set. In Cameroon the patients show up early in the morning, and wait for their turn. The examinations are divided into parts, where each ophthalmic nurse has one certain task to do. For example, one ophthalmic nurse does the patient history and visual acuity (weight, blood pressure), when the patients are done they have to wait for the next examination, which depends on what was discovered through history. The last examination is the slit lamp, which the ophthalmologist does, and then he set the conclusion. One consultation can therefore last a whole day.

Illustration 5: *"Standard consultation"*

Photo: Marianne Mellem

We have now looked at the differences between a hospital in Cameroon versus an optical store in Norway, and we understand the underlying differences. The only way to get adequate eye examinations in Cameroon is in hospitals.

Since the eye department at MBH is so well-organised we had to do some changes to our original plans. Since we are not ophthalmologists we can not treat any disorders, and most of the patients that came to MBH had some kind of problem (disease/disorder/trauma). They did not come to the hospital primary to get glasses, which is what we could do for them.

7.1.1 Information posters and folders

Our work at the eye department at MBH mainly consisted of educating the nurses, and giving patients information about ocular health. The knowledge about ocular health and eye diseases are very poor, and therefore one of the most important issues is to give the patients and their families information about the importance of taking good care of the eyes, and to check their eyes regularly. Because of the changes and the reorganization we decided to make an information poster for the ophthalmic nurses, and a folder with information about some of the most common eye diseases to hand out to the patients (See appendix 7 and 8).

The decision to make information poster was made in cooperation with the ophthalmologists. They appreciated this kind of preventing work, because it is important to inform and educate about ocular health. Due to lack of time, the ophthalmologists do not find time to teach the nurses. The knowledge about general and ocular health in the population is poor. The importance of good hygiene in patients with conjunctivitis, is one example of lack of knowledge. Another is the importance of information to the patients with glaucoma, the risk for developing glaucoma increases when it runs in your family, and this is also unknown. Because of the lack of knowledge the patients with glaucoma often come to the hospital to late, their cup/disc ratio is close to 1.0, with severe reduced retinal sensitivity. Therefore, it is very important to hand out the information folders that they can bring home. And in this way help preventing further blindness in the family.

7.1.2 RECEWAPEC

Prince Bengha Martin has founded an organisation which intention is to speak on behalf of the elderly in Cameroon. This organisation, RECEWAPEC, cooperates with the eye department at MBH, making sure that elderly comes to the hospital, and helping organising the outreach camps. But this cooperation is just a small part of what RECEWAPEC do. [15]

Many elderly in Cameroon lives in isolation with little help from their families, communities and government. Therefore RECEWAPEC started programs for ensuring incomes for the elderly, they do easy work such as cultivating mushrooms, which they both can eat and sell for living. [15]

Margaret Bengha works for RECEWAPEC, she was sponsored by RTS to do a certificate course in optical dispensing at Aravind in India, from January 1st 2008 till

March 31st 2008. Prior to that course she had gone to Aravind on a customised course on primary eye care service and refraction for three months in 2007 (she was not sponsored by RTS for this training though).

Margaret spent the three weeks together with us at the eye department. We helped her and taught her some more, and she borrowed our equipment to practice her techniques. For example retinoscopy, this requires a lot of practice. For us, as students, it was very learningful to be on the other side of a learning situation. Margaret wanted us to see her present office, were it was intended for her to do refractions. The office was small, poor light conditions (on/off) and the distances were all wrong. RTS wanted us to make an assessment of what kind of equipment she needed to do appropriate consultations. We recommended retinoscope, cover, pen light, fixation targets and near visual acuity chart. When she got the equipment, two of the students went to organize and set up a new refraction room together with her, which would be more appropriate for consultations. Magaret will continue the cooperation with the eye department, mostly on outreach camps and screenings, and she will refer patients that need medical attention to the hospital.

7.1.3 Refraction at the hospital

To do the consultations at MBH more efficient, we did refractions at the conference room. Therefore we had to adapt to the varying conditions. A moment to remember is when an aphakic, 4-year old boy came for refraction and his VA was finger counting on two meters. We found about +20.00 DS and his VA improved to 6/24. The eye department was able to provide glasses for him the same day.

Illustration 6: *"Aphakic 4 years old"*

Photo: Maja Larsen

7.1.4 Outreach camps and school screenings

Outreach camps and school screening is a way for the hospital to help people that for some reason (economical/practical) have difficulties getting to the hospital for an eye examination. The patients only pay for the treatment, like medications for glaucoma or conjunctivitis.

We went to schools where we screened for eye diseases and refractive errors among the pupils. The organiation of the schools is very different from how it is in Norway. Some of the schools were located far from the nearest village and were relatively new. And the ages in one class could vary between 12 to 18 years old, because the older ones did not have the opportunity to go to school until now. We went to three schools, and screened about 250-400 pupils at each school. First in the morning all the pupils were gathered and we gave information about the most common eye diseases and disorders. The most important issue is early detection and treatment of glaucoma which has relatively high prevalence in younger Cameroonians (see graph 2). The screening methods we used were those the eye department at MBH normally uses for school screenings. We checked all of the pupil's visual acuity (VA). We did retinoscopy, refraction and ophtalmoscopy on those who had poorer VA than 6/18. Some of the cases we saw were; retinitis pigmentosa, albinos with nystagmus and poor vision, cataract, trauma, conjunctivitis, strabismus, presbyopia, hypermetropes and excessive myopes. Some of the patients had pathologies and the VA had no improvement potential, those patients were advised to go to MBH for further consultations.

Illustration 7: *"School screening"*

Photo: Marthe Nilsson

Together with some of the staff from the eye department we went to small villages were we did refractions and screened for eye diseases, so called outreach camps. Many of these patients do not have the opportunity to go to MBH or other hospitals, and that is why these outreach camps are so important. We brought medications, so simple diseases could be healed, for example bacterial conjunctivitis. Most of the elderly that showed up needed cataract surgery and were referred to the hospital. But in contrast to the eye department at the hospital the patients now mostly came for glasses because of presbyopia. The staff always bring their suitcase with glasses, which patients can buy. At these outreach camps we did the refractions. The working conditions were not the best, and we had to adapt to whatever met us. In these situations we felt that our job was meaningful and we really helped patients. On the other hand it feels hopeless when you find problems that could have been easily solved in Norway, but here results in blindness. A 22-year old girl had very poor VA (finger counting at 0.5 meter), her refraction showed -18.00 DS at both eyes, and the VA got much better (0.8 on both eyes). She told us that she had not been able to see all her life, and we tried to explain that all she needed was glasses. Then she answered: "I can't afford it".

7.1.5 Observation

Because of the close work with two ophthalmologists we had the opportunity to observe at the operation theatre. The ophthalmologists are both once a week in theatre. This was a very exciting experience for us, and we got to see diseases and surgeries that we never see in Norway. Most of the surgeries were for mature cataract, this means that the patient is blind. After the surgery, which takes 20 minutes per eye, their vision is restored. The price is 32,000 CFR per eye. But there is also a welfare arrangement that can help patients that cannot afford the surgery themselves. Unfortunately this arrangement has long waiting lists.
In these situations the hospital was very efficient, the patient may come to the hospital on early Monday morning for consultation, and can then be operated the day after. And they could leave after a check Wednesday morning. Other surgeries we observed were trabeculectomy, cornea transplantation, pterygium and trauma.

Illustration 8: *“Operation theatre”*

Photo: Tonje Saurdal

7.1.6 Workshop

Some of us were at the workshop. Most of the glasses are either for reading or distance, some bifocals and very few progressives. Therefore we showed the construction of progressive lenses and how to grind. As mentioned before, most of the patients do not come for glasses, therefore the average producing is about one pair of glasses per day.

7.1.7 Cultural differences

One of our main challenges was the culture differences. Every culture has its own way of showing respect. In Cameroon they called us Ms. and Mr., as well as they called their older patients “papa” and “mama”, which are terms of respect.

At the hospital the patients only get medical treatment and a bed. Relatives have to prepare meals and do the nursing. Because of this the relatives had to stay at the hospital as well, were they either lived in a designated set of houses or slept on the lawn outside the wards.

Another big challenge was the language and communication. English and French are the two main languages used in school and government, but they also have several African languages in Cameroon. Because of that we had to use a lot of gestures to communicate, especially in the beginning, during the examination and at the school screening and outreach camps. The Cameroonians speaks a language called “pidgin English”. The words are mostly English, but the pronunciations are mainly influenced by African language. We also think that they had some difficulties in understanding us, maybe because of our accent or our fast speaking. To perform an examination and not be able to communicate easily was quite a challenge and something different from what we are used to. The African ophthalmologist and ophthalmic nurses also used a harsher tone compared to the staff of Norwegian healthcare when talking to the patients.

7.2 Processing

The time after the return to Norway we have been collecting information and facts to use in our report, and debriefing impressions and experiences. We had seven weeks for processing the report, these weeks included five of our final exams.

8 Discussion

8.1 Optometry and ophthalmology in developing countries

Africa has approximately 10 % of the world's population, and 19 % of the world's blindness, this suggest a disproportion of the blindness and visual impairment in the world. It also shows the link between eye care and poverty, because of the fact that you find 35 of the 50 poorest countries in the world, in Africa. According to Naidoo, the blindness, disabling visual impairment and the overall lack of eye care services are too often the result of social, economic and developmental challenges of the developing world. The hallmarks of eye care in Africa are poor practitioner-to-patient ratios, absence of eye care personnel, inadequate facilities, poor state funding and a lack of educational programs. Preventable and treatable conditions being the leading cause of blindness. The eye care in Africa stands with this in contrast to the rest of the world. [16]

This is, as mentioned before, the main issues at MBH as well. And even though Cameroon is one of the countries in sub-Saharan Africa with the best economy, the resources the hospital has access to are limited. Despite this, the eye department is well run and utilizes the accessed resources. But to reach the goals of RTS they have to be even more efficient, and do more of what they already do. To solve these huge challenges in eye care, and health care in general, Naidoo means that there has to be an economical growth which can lead to greater state funded eye care services. This will ensure the prevention of eye disease, the development of eye clinics at hospitals and health clinics, and training of human resources.[16]

Cameroon Baptist Convention Health Board (CBCHB), which is the organisation that drifts Mbingo, cooperates with governmental and non-governmental health care organisations, both Cameroonian and international, and funding agencies in Africa and rest of the world.[17]

The number of people living under the poverty line (< $1 per day) increases in the Sub-Saharan Africa, while most of the world experiences a decrease. As mentioned, Cameroon is one of the sub-Saharan African countries with the best economy. Despite this, 17.1 % of the population lives below the poverty line. In consequence to this, patients often get to the hospital too late, because they cannot afford the eye care services (or other health care services).[16] At MBH the patients pay for the services that the eye department provides, but there are also possibilities for the poorest patients to receive free care. [7]

In March 2007, a handful of Ministers of Foreign Affairs issued a statement which one can read in the "Oslo Ministerial Declaration, Global health: a pressing foreign policy issue of our time." Among other things one can read: "We believe that health is one of the most important, yet still broadly neglected, long-term foreign policy issues of our time. Life and health are our most precious assets. There is a growing awareness that investment in health is fundamental to economic growth and development." With this the health-question was brought to the agenda of foreign policy. This will probably lead to more focus on health, also in the

developing countries. Further on, this will lead to a more efficient health care. The benefits of the investment in health can be translated into billions of dollars, because poor health leads to a loss in productivity.[16]

Another question important to the eye care in Africa is the high prevalence of HIV/AIDS which requires a high percentage of the limited resources. This leads to a disproportion in the health care system, and there are other parts in the system that gets less attention, among them eye care. As mentioned, the leading causes of blindness in Africa are preventable and treatable ocular conditions. [16] This means that it can be eliminated in a cost-effective way (e.g. glasses and cataract surgeries). Nevertheless, it requires facilities, resources and knowledge.

In the blindness prevention and eye care programs the refractive conditions has been neglected. And even though one of the main targets for RTS is to accomplish more cataract surgeries, they also focus on affordable spectacles for those who need it. According to Naidoo, a study in Durban, South Africa (which is one of the best resourced countries in Africa), indicated that only 19 % of the children that needed spectacles were wearing some. This was a consequence of the fact that they did not have access to screenings, eye examinations or spectacles. It correlates to what we experienced in Cameroon. Many of those who have refractive errors cannot afford spectacles. And this is only one example of avoidable blindness. Another is the need of reading glasses after the age of 40. Many cannot afford these spectacles, and they may not be able to do their work which requires good vision at near, which again can lead to poverty. [16]

Cataract is estimated to count for about 50 % of world blindness, the prevalence is higher in developing countries and the onset is earlier. The only treatment is cataract surgery, which is the most commonly conducted surgery in the world. Once again, the main problem is that the patients cannot afford it. That is why the work RTS, and other eye care organisations do is so important. By offering free eye care (and cataract surgeries) one can save a whole family from poverty. But, these organisations work at the level of local communities and the majority of Africa's poor will not be reached without an expansion of the services. [16]

As mentioned, MBH today do about 1,000 cataract surgeries a year, and RTS has a goal for MBH to reach 3,750 cataract surgeries. Two other eye care districts/hospitals in fellow sub-Saharan Africa countries have increased their cataract surgery rate, (CSR), number of cataract surgeries per million population per year. This as a result of specifically planned programs. Like MBH the other hospitals also have well trained ophthalmologists offering extra capsular cataract (ECCE) surgery. In 2002 the two hospitals had an estimated CSR of respectively 313 and 644. After two years with the new program the CSR was largely increased. [18]

These significant changes were made

- Computerized registration system
- One packed fee for the surgery (accommodation, medicine, IOL etc.)
- Collecting surgical fees in the field

- Introduced locally made camp beds
- Increased productivity of surgeons by introducing two tables per surgeon
- Increased ward and theatre space
- One new ophthalmic nurse and one paramedical surgeon was hired to increase productivity
- Community based workers were salaried to replace volunteers

Other improvements in the eye care programs were good advertising of outreach camps, improvement of the referral chain and providing transport for patients to and from the hospital. [18]

8.2 Screening

Good vision is important for students in the study situation. As mentioned earlier, when we went for school screenings the screening criteria we practised was VA 6/12 or below. This is one line above WHO's criteria for low vision. [8] As an example 6/12 is the criteria for being permitted to drive in Norway. Since VA is the only criterion, there is no testing of binocular vision or other conditions that can affect the visual situation. We also only tested vision at distance. The fact that a student is detected with a VA below 6/12 does not mean that he/she is close to be defined as a vision impaired. Because this definition also includes that the vision impairment should persist even after treatment or standard refractive correction. Most of the visual problems students have are related to refractive errors, and therefore preventable.

8.3 Differences between Norway and Cameroon

Due to differences in climate, genetics, infrastructure and lifestyle the clinical picture obviously differs when comparing Cameroon to Western Europe. Many people in Cameroon have jobs that involve spending a lot of time outdoors. This combined with the proximity to equator increases the exposure to UV radiation. The use of protective spectacles is also less common in Cameroon thus increasing the potential ocular trauma in work related accidents.

The public knowledge on subjects such as hygiene, nutrition and health is low. The health infrastructure is also far below western standards. Transportation and admissions to hospitals are complicated, time consuming and expensive for both the patient and the patients family. This often causes people to seek care when it is too late. As a result many diseases that is easily avoided and cured or treated in Western Europe have more severe consequences in Cameroon.

There are not many optical shops in Cameroon, therefore our project was at a hospital with an eye department. To demonstrate the differences we experienced we have compared MBH to our local eye department at Buskerud Hospital. The eye department at Buskerud Hospital accomplishes approximately 2100 surgeries each year. In both hospitals, cataract surgery is the most common ocular procedure. According to statistics, 71.4 % in Buskerud compared to 47% in MBH of the ocular surgeries are cataract extraction of various kinds. At MBH the

cataracts are extracted when they become mature while in Buskerud hospital they are removed almost before they show any symptoms.[13]

One of the main differences in surgeries at MBH compared to Buskerud hospital is glaucoma (see graph 1 and 3). Glaucoma is more common at Mbingo and the local ophthalmologists reported a variant which progressed faster and were further developed when diagnosed. This difference was not only due to Africans being genetically disposed to glaucoma, but also lack of knowledge. The general population was unaware of the asymptomatic nature of glaucoma and the hereditary factor involved.

8.4 Follow up

As mentioned, the eye department is very well-organised and efficient. According to our knowledge, the eye department is organised in the best possible way. But, if the hospital shall reach RTS' goals, we think some changes have to be done. One of the most concrete goals is to do 3,750 cataract surgeries a year. To reach this goal the two ophthalmologists have to spend more time doing surgery. Hiring one more ophthalmologist could solve this problem, we have no prerequisite to decide if this is economically possible or not for the hospital. Other solutions may be to teach some of the nurses to do the slit lamp examinations that the ophthalmologists do, to release more of their time. Hiring an optometrist for the same reason is an alternative. The nurses are well-educated, and experienced to evaluate fundus with an ophthalmoscope, and to evaluate anterior segment in general. At outreach camps, the nurses make all conclusions and also requisite medicine to those who need it, such as patients with glaucoma and conjunctivitis. Another specific change to make the eye department even more efficient is to get a new instrument for measuring the intraocular pressure. The Puls Air they use today is difficult in use, and time consuming. We would recommend the eye department to invest in an ICare Tonometer. It is easy in use, reliable, comfortable for the patient and mobile.

We understand that RTS has goals which include the hospital to be more efficient and to see more patients. The line in front of the eye department is already long, the patients show up early in the morning and the waiting room is full throughout the day. So in today’s capacity the eye department is full, therefore it's good to know that there are plans for expansions.

If BUC wants to continue the project at MBH, we advise to send a smaller group of students next year. This will ensure that the students benefit more from the stay at MBH. It will also be helpful in the preparations if the hospital and BUC keep the connection for a longer period than we did. Then it will be easy to prepare if there for example are equipments the students should bring to the hospital. When we summarized what we had done at the hospital, some ophthalmic nurses told us that they wanted to learn retinoscopy. Next year’s student should try to bring a retinoscope with instructions for use, which can be donated to the eye department. We also think they should focus on the history. Compared to Norwegian standard it lacks some important points, such as familiar pathology history and symptoms.

They should also bring a standardized history form. This should include an explanation to why they should ask the different question.

8.5 Conclusion

In accordance to our main goal, we accomplished an assessment of needs at the eye department at MBH. Considering the available resources the eye department is well drifted. According to our knowledge, the clinic will have to expand to reach the goals set by RTS. We implemented one of our subsidiary goals, to educate ophthalmic nurses at the eye department, with producing information posters about the most common eye diseases. Folders that was intended to hand out to the patients were produced after a reassessment of original goals, when discovering the lack of knowledge about eye health among the general population. The second subsidiary goal was to do refractions, in advance we thought this would be our main task. We realized that the need for refractions did not correlate to our expectations. Participation on school screenings and outreach camps, the third subsidiary goal of ours, became our main task at the hospital. This was the tasks were we felt we could contribute the most. Since the workshop was not in use on a regular basis there were some difficulties to achieve our fourth subsidiary goal, which was to support the workshop. We appreciated the opportunity to observe at the operation theater, this was also a subsidiary goal. For us, as students, it was exciting to observe surgeries such as cataract, trabeculectomy, pterigyum, trauma and more. The final subsidiary goal was to arrange for an eventual next year student group, and we have some ideas how later projects ought to be accomplished. Finally, our long term goal is to maintain a durable cooperation between MBH and BUC. We hope BUC see the value of a further cooperation with MBH and let later year students have the opportunity to approach MBH. Both MBH and RTS have expressed a wish to participate in future BUC-projects.

8.6 Postscript

We want to address a word of thank to all our sponsors (see appendix 2).

Isabelle Hoyaux, RTS
Philip McAllister, RTS
Cameroon Baptist Convention
Right to Sight
Prof. Pius, CBC/Mbingo
Dr. Emmamnuel Tambe, MBH
Dr. Alex Wryter, MBH
Nshom Emmanuel, MBH
Jaitor Alex, MBH
George Ngwang, CBC
Elin Silje Helen Jensen, Counsellor
Irene Langeggen, Counsellor
Aud Brennhaug Pedersen, at Hjelp24
Blefjell Sykehus, Avdeling Kongsberg, for course in hygiene
We also want address a word of thank to all the staff at Mbingo Baptist Hospital.

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Appendix 1

Prosjektprotokoll

Tittel

Humanitært arbeid i Kamerun 2009

Bakgrunn

Kamerun blir ofte kalt ”et Afrika i miniatyr” på grunn av sitt kulturelle, geografiske og språklige mangfold. Kameruns økonomi er godt over gjennomsnittet i Afrika, likevel lever 51 % av befolkningen under fattigdomsgrensa. [1]

AIDS-epedemien er en trussel for mange land i Afrika, også i Kamerun. 6 % av befolkningen er HIV-positive. Sykdommen er tabubelagt og dette gjør det vanskelig å drive forebyggende arbeid. Gjennomsnittlig levealder i følge WHO er 50 år for menn og 52 år for kvinner. Barnedødeligheten i Kamerun er høy, og kun halvparten av barn under fem år blir vaksinert. [2] Andelen analfabeter er stor, med en prevalens på 25 % i 2003. [1]

I følge Right to Sight er det 51 øyeleger og 12 kataraktkirurger i Kamerun. Alle disse har utdannelse fra et annet land. For å tilfredsstille Vision 2020 sitt mål om å utrydde unødvendig blindhet, skal Kamerun utføre 50 000 kataraktoperasjoner per år, mens de i dag utfører kun 13 000. Myndighetene i Kamerun har bedt Right to Sight om hjelp til å utdanne øyehelsepersonell. [3]

Mbingo Baptist Hospital ligger i den nordvestlige delen av Kamerun, som er engelskspråklig. Sykehuset ble opprettet i 1952 som et sykehus for spedalske, og vokste til et fullverdig sykehus i 1965. Deres motto er: ”Providing exemplary health care with genuine compassion, and with overriding purpose of evangelical witness”. Sykehuset i Bamenda har en stab på over 400, og en sengekapasitet på 250, hvorav 10 senger er satt av til øyeavdelingen. Oftalmologi er et av deres behandlingstilbud.
Øyeavdelingen startet i 1998, og har i dag 16 ansatte og to oftalmologer. Avdelingen har egen operasjonssal hvor det utføres 6 til 10 kataraktoperasjoner hver uke. I tillegg er det optisk verksted i tilknytning til avdelingen.

Nåværende status er at på MBH utføres 1000 kataraktoperasjoner i året. Målet til RTS er å øke dette til 3750 i året. RTS skal i tilegg til å øke antall operasjoner, bedre kvaliteten på øyehelsetilbudet, samt sikre at tilbudet opprettholdes i fremtiden. [3]

Formål og problemstilling

Formålet med vårt hovedprosjekt er å gjøre prosjektet bærekraftig over tid. Vår oppgave vil først og fremst være å bidra med vår kunnskap, og å være en ekstra ressurs for øyeavdelingen på sykehuset.
Vi velger å ikke definere design, utvalg og populasjonsstørrelse i protokollen, dette fordi det er et humanitært prosjekt og ikke en forskningsoppgave.

Våre arbeidsoppgaver i Kamerun blir:

- Refraksjonere på sykehuset
- Hjelpe og lære opp ansatte på verkstedet
- Være med MBHs team på outreach camps
- Delta i den lokale organisasjonen Recewapecs aktiviteter
- Opplæring av lokalt personell innen optometri
- Observere operasjoner og screening på sykehuset

Variabler

Okulære patologier vil bli presentere statistisk i form av grafer. Dette med hensyn til forskjellige typer og prevalensen av dem.

Datainnsamling

Vil utføres ved observasjon/kartlegging av klinikken med tanke på videre behov (utstyr, kompetanse, osv.).

Analyse

Innsamlede data systematiseres og analyseres, i forhold til forventede resultater.

Prosjektorganisasjon

Gruppeleder:	Maja Larsen
Økonomiansvarlig:	Marius Ottestad
Sekretær:	Marthe Nilsson
Øvrige gruppemedlemmer:	Kristian Brekstad
	Tonje Saurdal
	Marianne Mellem
Veileder:	Elin Jensen

Personell, utstyr, ressurser

Vi er villige til å utføre en arbeidsmengde som tilsvarer de 60 studiepoengene som hovedprosjektet gir. I tillegg vil vi utføre det dugnadsarbeidet som trengs for å kunne finansiere prosjektet.

Kostnader og finansieringsplan

Se budsjett

Tidsplan

Uke	Hva
44	Prosjektforslag tilgjengelig på BB
45	Speed-date, tildeling av prosjekt
46	Innlevering av prosjekttittel, navn på gruppemedlemmer, medlemsoppgaver, kontonummer.
47	Prosjektprotokoll leveres til veileder
48	Prosjektprotokoll leveres på BB, obligatorisk kurs i litteratursøk
49	Eksamensperiode
50	Eksamensperiode
51	Eksamensperiode, utdanningsmesse Dønski vgs.

52	Eksamensperiode
1	Juleferie
2	Skolestart. Ta kontakt med Hjelp 24, utdanningsmesse Ringerike vgs.
3	Utdanningsmesse, Lillestrøm
4	
5	Utdanningsmesse Asker vgs.
6	
7	
8	Vinterferie
9	Avreise Kamerun
10	Kamerun
11	Kamerun
12	Kamerun
13	Kamerun
14	
15	Påskeferie
16	
17	Skriftlig eksamen
18	Skriftlig eksamen
19	Frist: Person vi vil invitere til prosjektpresentasjon
20	Praktisk eksamen, Frist: innlevering info til abstraktbok
21	Innlevering av prosjektrapport og poster
22	
23	
25	Prosjektfremlegging

Publisering

Poster, muntlig framlegging og hovedprosjektoppgave. Mulig artikkel i Optikeren. Vi vil også forsøke å oppnå publisering i gruppemedlemmenes lokalaviser.

Etikk

- Følge den gyldne regel
- Ha respekt for lokale skikker/religion/kultur
- Skal ikke være forutinntatt og dømmende, heller ikke ved hjemkomst og analysering av prosjektet

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Appendix 2

Sponsorliste

Kamerun gruppen	
Pec Installasjon	6 000
Interoptik Ottestad	3 000
Optiker Ross & Sanne Synsam	1 000
Mære Sanitetslag	1 000
Harstad Tidende	1 000
Specsavers Tønsberg	500
Dugnad	4 153
Felles	
Rodenstock	5 000
Procornea	500
C-Optikk	12 000
Alcon Norge	5 000
FMC	12 000
Specsavers	10 000
Synoptik	1 500
Synsinformasjon	10 000
Lotteri	8 893
HIBU (Messe)	25 000

Peppes pizza	Gavekort (lotteri)
Dolly Dimples	Gavekort (lotteri)
Jonas B. Gundersen	Gavekort (lotteri)
Pec Installasjon	Hodelykter
Apotek Sølvkronen	Solkrem
Apotek 1 Kongsberg	Myggspray/Solkrem
Hjelp 24	Antibac

Appendix 3

Budsjett Kamerun 2009

Kostnader	antall	kr	
Reise:			
Kongsberg - Gardermoen t/r, studenter	6	368	2 208
Kongsberg - Gardermoen t/r, veileder	1	490	490
Gardermoen - Kamerun, t/r, studenter	6	10 000	60 000
Gardermoen - Kamerun, t/r, veileder	1	10 000	10 000
Vaksiner, studenter	6	3 500	21 000
Visum, studenter	6	500	3 000
Visum, veileder	1	500	500
Losji, studenter (50 kr x 30 dg)	6	1 500	9 000
Losji, veileder (50 kr x 30 dg)	1	1 500	1 500
Mat, studenter (50 kr x 30 dg)	6	1 500	9 000
Mat, veileder (50 kr x 30 dg)	1	1 500	1 500
Reiseforsikring	6	500	3 000
Myggspray, myggnett, solkrem, etc.	1	3 000	3 000
Porto, kopier etc.	1	3 000	3 000
Sum Kostnader			127 198

Appendix 4

Brev til søknad om støtte

Humanitært arbeid i Kamerun 2009

Jeg er en student fra Kongsvinger som sammen med fem medstudenter fra tredje klasse ved Høgskolen i Buskerud, avdeling for optometri og synsvitenskap, har vært så heldige å få drive med ***humanitært arbeid*** i Kamerun som hovedprosjekt dette avgangsåret. Hovedprosjekt er et fag som har hele 60 studiepoeng, og er en arbeidsmengde som tilsvarer et år for en person.

Synet er en av de viktigste sansene mennesket har, og bør derfor ivaretas på best mulig måte. 90 % av verdens blinde og svaksynte bor i fattige land, og de har ikke like stor mulighet til å motta den hjelpen som vi nordmenn kan få av optikere og øyeleger. Derfor er det med stor glede og stort engasjement at vi får lov til å gjøre en forskjell hos de som ofte må ta til takke med det synet de har.

Hjelpen vi skal gi i Kamerun, er hjelp til selvhjelp hvor en viktig del av oppgaven er å spre kunnskapen vår videre til optikere og optikerstudenter blant lokalbefolkningen, slik at de selv kan dra nytte av den, og igjen lære andre. Vi skal bidra til at optikerutdanningen blir optimalisert, og opprette et bærekraftig prosjekt hvor målet er at lokalbefolkningen selv skal drive det videre. Videre vil vi kartlegge behovet for utstyr, samt drive screening blant lokalbefolkningen.

Foreløpig har vi et budsjett på om lag 160.000 (se vedlagt budsjett). Dette er et frivillig prosjekt, og foregår på ikke-kommersiell basis. Frivillig arbeid er imidlertid ikke kostnadsfritt for de som utøver det. Dette betyr at vi er avhengig av støtte fra flest mulige for å gjennomføre prosjektet.

Reise, kost og losji ønsker vi å organisere på rimeligst mulig måte. Gruppen vil henvende seg til bedrifter, fond og legater for søknad om støtte. I tillegg har vi tatt på oss en del dugnadsarbeid. Vi håper dere kan ha interesse av, og ønske om å ta del i et slikt prosjekt.

Dersom du ønsker mer informasjon om prosjektet vårt, vil vi gjerne at du tar kontakt.

Vennligst benytt kontonummer 2291.17.05099, og merk tydelig med avsender.

Vennlig hilsen

Vedlegg 1: Budsjett

Appendix 5

Facts about Cameroon

Population

- Number 18,879,301 (July 2009 est.)
- Age structure 0-14 years: 40.9 %
  15-64 years: 55.9 %
  65 years and over: 3.3 % (2009 est.)
- Growth rate 2.19 % (2009 est.)
- Urban population 57 % of total population (2008)
- Life expectancy at birth 53.69 years (2009 est.) [1]

Access to improved water sources

- Urban 84 %
- Rural 41 %

Access to improved sanitation

- urban: 63 %
- Rural: 33 % [2]

Health system statistics

- Physicians number: 3124
  - Density 0.19 per 1000
- Nurses number: 26042
  - Density 1.6 per 1000
- Pharmacists number: 700
  - Density 0.04 per 1000

Total expenditure on health as % of gross domestic product: 4.2
General government expenditure on health as % of total expenditure on health: 28.9 [2]

HIV/AIDS, prevalence rate: 5.1 % (2007 est.)
HIV/AIDS, people living with: 540,000 (2007 est.) [1]

Causes of death

- HIV/AIDS 21 %
- Lower respiratory infections 14 %
- Malaria 8 %
- Diarrhoelar diseases 6 %
- Perinatal conditions 5 %
- Other 46 % [2]

Literacy (definition: age 15 and over can read and write)

- total population 67.9 %

- male 77 %
- female 59.8 % (2001 est.) [1]

Labor force by occupation
- agriculture 70 %
- industry 13 %
- services 17 % (2001 est.)

Unemploymentrate: 30 % (2001 est.) [1]

Gross national income per capita: $2090
Population living below the poverty line (with < $1 a day): 17.1 % [2]

Central African CFA franc (XAF) has been pegged to the euro at a rate of 655.957 CFA francs per euro. [1]

Religions
- Indigenous beliefs 40 %
- Christian 40 %
- Muslim 20 % [1]

References

1 www.cia.gov/library/publications/the-world-factbook/geos/cm.htm

2 www.righttosight.com/cameroon.php

Appendix 6

Common eye diseases

Glaucoma is a possible blinding condition. There are several types of glaucoma which make the treatment varied. There is no single definition of glaucoma treatment, for example one patient with glaucoma has no symptoms, while another patient can experience pain and redness or headache. Glaucoma is a disease that destroys the optic nerve which can result in progressive visual field loss. Raised IOP is an important risk factor for developing glaucoma, but this is very individual. One person may develop optic nerve damages at a relatively low pressure, while another person may have high eye pressure for years and never develop any damage. [1]

Glaucoma can roughly be divided into two main categories, primary and secondary glaucoma. Primary glaucoma can either be open angle, closed angle or acute glaucoma. Early stages of both types of glaucoma are often asymptomatic, and patients often seek help to late, particularly in developing countries. Once vision has been lost, regardless of the type of glaucoma, it cannot be restored. [1]

Both acute- and angle closure glaucoma appears suddenly and are symptomatic. Risk factors are age, gender (females: men, 4:1) and race. Open angle has a more slow progress and is asymptomatic, so the patient may not notice it before the vision loss is significant. Risk factors that can be associated with primary open angle glaucoma are age, race (black>white) and myopia. [1]

Secondary glaucoma may be acquired or developmental is caused by ocular diseases, systemic diseases or medications. Examples of secondary glaucoma is phacogenic glaucoma, neovascular glaucoma and traumatic glaucoma. For persons under the age of 40 years, glaucoma is uncommon, but the prevalence increases with age. [1]

A retrospective study published in 2006 showed that glaucoma has a overall prevalence of 5.5 % in Cameroon with primary open angle glaucoma as the most common type (4.3 % of total population) and the average patient age when glaucoma were diagnosed was 53.3 years old. The study also showed that many of the patients became blind (8 % binocular and 32.9 % monocular), this being as a direct consequence from a poorly developed eye care service. Among those patients who got the disease diagnosed early and were put on treatment the compliance was poor. [2] Whether the poor compliance is due to costly medicine or low knowledge is unknown. On diagnosis these patient had a mean age of 26.3 years, the average pressure upon diagnosis was 28.2 mmHg, 32 % was blind on both eyes at the first examination and 88 % had a family history of glaucoma. [3] Both studies confirm that people of African ethnicity have a higher prevalence of glaucoma. The patients are relatively young and many of them ends up blind because of poor compliance to treatment. Detection and treatment are both challenging and expensive because of the poorly developed eye care services and the quick progression of the disease. From an economical viewpoint, surgery to

lower the IOP is favorable over medical treatment being more cost efficient and achieving greater reduction in IOP. [3]

Statistics from Mbingo Baptist Hospitals in 2007 shows 62 trabeculectomy surgeries, compared to 43 surgeries from January to July in 2008. [4]

Cataract

According to WHO's definition: "Cataract is clouding of the lens of the eye which impedes the passage of light." [5]

Most cases of cataract increases with age, but children can also be born with it. Cataract can also be caused by inflammations or systemic diseases. There are several types of cataract.

Age-related cataract

- Anterior subcapsular cataract is cataract that lies directly under the lens capsule.
- Posterior subcapsular opacity lies in front of the posterior capsule. The near vision is more affected than the distance vision. Patients can also have trouble with bright light conditions such as sunshine and car lights.
- Nuclear cataract starts as a degeneration of the lens nucleus. One of the main symptoms is increasing myopia. Some elderly patients that are use to reading glasses can often be able to read without their spectacles.
- Cortical cataract may involve both the anterior and posterior cortex. The opacities start as vacuole. Patients with cortical cataract often complain of glare due to the light scattering. [1]

Secondary cataract is a result of other primary ocular diseases or medications. Examples are chronic anterior uveitis, acute angle-closure and high myopia. [1]

Conjunctivitis

Conjunctivitis is an inflammation of the conjunctiva. Symptoms are lacrimation, gritty irritation, burning and stinging. Itching is the hallmark of conjunctivitis, especially allergic conjunctivtis. Blepharitis, dry eye, photophobia and foreign body sensation are also symptoms that can be associated with this inflammation. We think that one of the major reasons/causes of conjunctivitis is caused by the poor hygiene practices. [1]

Bacterial conjunctivitis

Acute bacterial conjunctivitis is a common condition and about 60% resolves without treatment. Treatment with antibiotic eye drops does often speed recovery, and prevent re-infection. Symptoms of bacterial conjunctivitis are grittiness, acute onset of redness, burning and discharge. Involvement is usually bilateral, but one eye may become affected 1-2 days before the other. In the morning, the eyelids are stuck together and are difficult to open. [1]

Allergic conjunctivitis

Seasonal allergic conjunctivitis is the most common form of allergic conjunctivitis. The most frequent allergens are tree and grass pollens. Symptoms are acute onset of redness, itching and watering. This is associated with sneezing and nasal discharge. The treatment involves mast cell stabilizers, antihistamines and steroids. [1]

References

1 Kanski, J. J., (2007) *Clinical Ophthalmology, A Systematic Approach,* Butterworth Heinemann Elsevier, ISBN-13: 978-0-08-044969-2

2 Ellong, A., Mvogo, C.E., Bella-Hiag, A.L., Mouney, E.N., Ngosso, A., Litumbe, C.N., (2006) *Prevalence of glaucomas in a Black Cameroonian population,* 16:2, 83-8

3 Ellong, A., Ebana Mvogo, C., Nyouma Moune, E., Bella-Hiag, A., (2007) *Juvenile glaucoma in Cameroon,* Bulletin de la Societe belge d Ophtalmologie, 39 (305):69-77

4 Statistics from Mbingo Baptist Hospital eye department, Dr. Tambe, MBH

5 www.who.int/topics/cataract/en

Appendix 7

Information posters

Conjunctivitis

Conjunctivitis is the most common of all eye diseases. It is an inflammation of the conjunctiva, which is the outermost layer of the eye and the inner surface of the eyelids.

Bacterial conjunctivitis

Acute bacterial conjunctivitis is a common and usually self limiting condition caused by direct eye contact with infected secretions. It is the most common of the conjunctivitis'. It can be caused by staphylococcus, streptococcus, etc.

Symptoms

- Acute onset of redness, grittiness, burning and discharge.
- Involves usually both eyes although one eye may become affected 1-2 days before the other.
- In the morning, the eyelids are frequently stuck together and difficult to open.

Treatment

- About 60% of cases resolve within 5 days without treatment.
- Antibiotics are frequently administered to speed recovery and prevent new infections.
- Warm and wet compresses
- In adults broad-spectrum antibiotic drop should be administered every 2 hours during the days.

Viral conjunctivitis

Conjunctivitis caused by a virus. A variety of viruses can produce the disease. The most common types are herpes simplex or adenoviruses. The infection usually begins with one eye, but may spread easily to the other. Therefore, the patients are often advised not to touching their eyes or sharing towels.

Symptoms

- Diffuse pinkness of conjunctiva

Treatment

- There is no specifically treatment
- Symptomatic relief may be achieved with warm compresses and artificial tears
- For the worst cases, topical corticosteroid drops may be prescribed to reduce the discomfort from inflammation
- Antibiotic drops
- Usually resolves within 3 weeks

Allergic conjunctivitis
Presentation is with transient, acute attacks of redness, watering and itching, associated with sneezing and nasal discharge.
Cause

- Seasonal allergic: pollen, grass
- Perennial allergic: house dust, smoke

Symptoms

- Swelling of the conjunctiva and the lids, itching, burning, tearing, light sensitivity

Treatment

- Antihistamines, corticosteroids
- Hygiene: Clean the eyelids and make sure that all pus is removed. MAKE SURE YOUR HANDS ARE CLEAN BEFORE AND AFTER YOU TOUCH THE EYE!

All the symptoms do not have to be present at the same time for it to be conjunctivitis.

Pterygium

A pterygium consists of degenerative changes in the outer layers of the eyes, usually on the nasal or the temporal side of the cornea.

Cause

- Over-exposure to sunlight
- Chronic dryness

There are three stages of pterygium
1. Extends less than 2 mm onto the cornea.
2. Involve up to 4 mm of the cornea and may be primary or recurrent following surgery. It may interfere within the tearfilm, and induce astigmatism.
3. Invade more than 4 mm of the cornea, and involve the visual axis.

Treatment

- Medical: Treatment of symptomatic patient involves tear substitutes, and topical steroids. The patients should wear sunglasses to reduce sunlight exposure and decrease the growth stimulus.
- Surgery is indicated for type 2 and 3 lesion.

Glaucoma

Glaucoma is an eye disease characterized by an elevated or unstable intraocular pressure (IOP), who causes damage to the eyes structures. The increased pressure may cause an accelerated loss of nerve fibers with depression of the optic disc as well as characteristic loss of visual field. Glaucoma is usually divided into open-angle and angle-closure types. If the cause of the glaucoma is a recognized ocular disease or injury, it is called secondary, whereas if the cause is unknown it is called primary.

Risk factors for developing glaucoma:
- Retinal nerve fiber defect
- Older age
- High vertical cup-disc ratio
- High IOP (over 21 mmHg)
- Changes around the optic disc
- Thin central corneal thickness
- High myopia (nearsightedness)
- Family history

Open-angle glaucoma
Glaucoma in which the angle of the anterior chamber is open and provides the fluid inside the eye (aqueous humour) free access to the drainage apparatus.

It can occur:
As a *primary open-angle glaucoma* (POAG). The increased IOP leads to degeneration and depression of the optic disc and typical defects of the visual field. It is the most common type of glaucoma and because of its insidious nature is difficult to detect. It is characterized by an almost complete absence of symptoms. Haloes around lights and blurring of vision occur in some patients when there has been a sudden increase in IOP or when the disease is very advanced. The diagnosis of this disease is made by demonstrating that the eye has a characteristic visual field loss. There may also be a raised IOP, although this is not always the case.

Risk factors for developing open-angle glaucoma:
- Age > 35 years
- Family history of the disease
- High myopia
- Diabetes mellitus

The other type is *secondary open-angle glaucoma* in which the IOP is elevated as a result of ocular trauma or iridocyclitis (inflammation of both iris and the ciliary body), crystalline lens abnormalities, etc.

Management of open-angle glaucoma is usually by medication, unless this proves ineffective and surgery may be necessary.

Angle-closure glaucoma
Glaucoma in which the angle of the anterior chamber is blocked by the root of the iris which is in apposition to the trabecular meshwork and thus the aqueous humour cannot reach the drainage apparatus to leave the eye. This condition occurs usually in anatomically shallow anterior chambers, as is often the case in hypermetropes.

Angle-closure glaucoma can either be primary or secondary following iritis (inflammation of the iris), iridocyclitis, postoperative complications, traumatic cataract, tumours etc. Moreover, angle-closure glaucoma is divided into acute and chronic.

In *chronic angle-closure glaucoma* there are intermittent periods in wich the angle of the anterior chamber is blocked because of progressively extensive adhesion of the iris to the cornea (peripheral anterior synechia). Symptoms may be absent or there may be periodic episodes of mild congestion and blurred vision. Treatment of angle-closure glaucoma is essentially surgical. However, initially therapeutic agents are used.

In *acute angle-closure glaucoma* there is a form of raised IOP in which the pressure within the eye increases rapidly due to blockage of the trabecular meshwork.

Symptoms include:

- Intense pain
- Redness
- Blurred vision
- Haloes around lights
- Nausea

Findings on examination include:

- Reduced visual acuity
- Greatly elevated IOP (in the range of 40-50 mmHg)
- Corneal oedema
- Semi-dilated and fixed pupil
- Shallow anterior chamber
- Glaucomatous optic nerve damage, degeneration of the iris and damage to the anterior epithelial cells of the lens (called glaucomflecken), as a result of elevated IOP

Treatment should be commenced as soon as possible and be directed at lowering the IOP. Surgery is often necessary.

Cataract

The crystalline lens is an avascular (without blood vessels) transparent structure situated in the anterior part of the eye. Any opacity in this lens capsule or substance is a cataract. The main symptom is gradually loss of vision.

Cataract can be divided into four stages

- Immature: the lens is partially opaque (not transparent)
- Mature: the lens is completely opaque
- Hypermature: the lens capsule is shrunken and wrinkled due to leakage of water out of the lens
- Morgagnian: a hypermature cataract where the lens nucleus has sunk inferiorly due to the liquefication

Age-related cataract
Cataract is a normal age-related change of the crystalline lens. The opacification will gradually affect the patient's vision, and eventually lead to blindness. UV-radiation has an effect.

Treatment for cataract is surgery. Indication for surgery is when the cataract has developed to a degree sufficient to cause difficulty in performing daily essential activities. When the lens has been surgically removed it is replaced by an artificial lens, during the same procedure. And the patient will get his/her vision back.

Cataract is not an acute disease, surgery can wait, vision will be restored anyway.

After-cataract (secondary cataract) after surgery, is an opacification of the capsule of the crystalline lens which recurs after extracapsular extraction. It is easily removed by a small laser surgery procedure.

Comment:
In the original poster there were several figures and pictures, they have been removed in this report because of copyright issues.

Appendix 8

Information folders for patients

GLAUCOMA

What is it?
Glaucoma is a slowly developing disease, which makes you loose your vision little by little. In some cases, patients have lost 50 % of their vision before they will notice. Glaucoma can occur secondary to trauma or other eye diseases, but in most cases the cause is unknown.

Symptoms
In the most common types of glaucoma, the symptoms are absent. In a more acute form of glaucoma, symptoms may include intense pain, redness, blurred vision, haloes around lights, nausea and reduced visual field.

Treatment
If you loose vision because of glaucoma, it will not come back. Therefore the treatment consists of saving the vision you have left, by using drugs each day for the rest of your life. Never give your medicine to anyone else, and use them only as prescribed. In some cases, glaucoma requires surgery.

Heritage
The risk for developing glaucoma increases if there are people in your family with the disease. We will advice both children and adults to check their eyes once a year if there is glaucoma in their family.

CATARACT

What is it?
Cataract is a change of the lens in the eye, and is normal when you come of age. The lens will gradually be less transparent, and this will affect the patient's vision, and eventually lead to blindness. Exposure to sunlight will accelerate the change in the lens.

Symptoms
Gradually loss of vision and sensitivity to light.

Treatment
The treatment is surgery. Cataract surgery is the most common surgery in the world. Surgery is needed when the cataract is causing difficulties for you performing daily essential activities. This surgery gives back your vision.

CONJUNCTIVITIS

What is it?

Conjunctivitis is the most common of all eye diseases. It is an inflammation of the conjunctiva, which is the outermost layer of the eye and the inner surface of the eyelids.

Bacterial conjunctivitis
Acute bacterial conjunctivitis is a common and usually self limiting condition caused by direct eye contact with infected secretions. It is the most common of the conjunctivitis'.

Symptoms
- Acute onset of redness, grittiness, burning and discharge.
- Involves usually both eyes although one eye may become affected 1-2 days before the other.
- In the morning, the eyelids are frequently stuck together and difficult to open.

Treatment
- Many cases resolve within 5 days without treatment
- Antibiotics, warm and wet compresses

Viral conjunctivitis
Conjunctivitis caused by a virus. A variety of viruses can produce the disease. The infection usually begins with one eye, but may spread easily to the other. Therefore, the patients are often advised not to touching their eyes or sharing towels.

Symptoms
- Pink eye

Treatment
- There is no specifically treatment and usually resolves within 3 weeks
- Warm compresses, artificial tears, antibiotic drops, topical corticosteroid drops

Allergic conjunctivitis
Presentation is with transient, acute attacks of redness, watering and itching, associated with sneezing and nasal discharge.

Cause
- Seasonal allergic: pollen, grass or
- perennial allergic: house dust, smoke

Symptoms
- Swelling of the eye and the lids, itching, burning, tearing, light sensitivity

Treatment
- Antihistamines, corticosteroids
- Hygiene: Clean the eyelids and make sure that all pus is removed.

MAKE SURE YOUR HANDS ARE CLEAN BEFORE AND AFTER YOU TOUCH THE EYE!

Appendix 9

Utgifter Kamerun 2009

	Kristian	Tonje	Marianne	Marthe	Maja	Marius	Veileder	Totalt
Visum	579	579	579	579	579	579	579	4 053
Transport Kongsberg - Gardermoen t/r	368	368	368	368	368	368		2208
Flybillett Oslo - Douala - Oslo	9 851	9 851	9 851	9 851	9 851	9 851	9 851	68 957
Vaksine 1	780	780	1 097	1 097	1 097	636		5 487
Vaksine 2	535	244	375	535	535	375		2 599
Kolera	337	337	337	337	337	169		1 854
Malaria	218	218	218	218	1 061	1 061		2 994
Kost og losji Mbingo	1 593	1 593	1 593	1 593	1 593	1 593	1 593	11 151
Kost og losji Douala	105	105	105	105	105	105	105	735
Kost og losji Bamenda	201	201	201	201	201	201	201	1 407
Transport i Kamerun	323	323	323	323	323	323	323	2 261
Porto		206						206
Myggnett/antibac etc.	784	784	784	784	784	784		4 704
Poster/kopiering								893
Sum	15 674	15 589	15 831	15 991	16 834	16 045	12 652	109 509