

**Annual Report 2007**  
**Panguma Hospital**  
**Kenema Diocese, Sierra Leone**

**Panguma , September 2008**

## **Table of contents**

1. General review of the year 2007
  - 1.1. Introduction
  - 1.2. Mission and role of the hospital in the district and diocese
  - 1.3. Hospital management
  - 1.4. Hospital and Compound
  - 1.5. Electricity and water
  - 1.6. Staffing
  - 1.7. Transport
  - 1.8. Education and training
  - 1.9. Hospital equipment
2. Finances
3. Hospital activities
  - 3.1. Outpatients
  - 3.2. Inpatients, general wards adults and children
  - 3.3. Maternity
  - 3.4. TB ward
  - 3.5. Laboratory
  - 3.6. Theatre
  - 3.7. Lassa
  - 3.8. HIV/AIDS
4. Outreach program
5. Challenges and future plans
6. Acknowledgements
7. Appendices

## **Abbreviations**

ANC	Ante Natal Care
ARI	Acute Respiratory Illness
CHASL	Christian Health Association of Sierra Leone
CHC	Community Health Centre
CHO	Community Health Officer
CHP	Community Health Post
DHMT	District Health Management Team
DMO	District Medical Officer
GE	Gastro Enteritis
IP	Inpatients
KGH	Kenema Government Hospital
MCHP	Mother and Child Health Post
MOHS	Ministry of Health and Sanitation
OPD	Outpatient Department
PPH	Post Partum Hemorrhage
PUD	Peptic Ulcer Disease
STI	Sexually Transmitted Illness
UFC	Under Five Children/Clinic
WFP	World Food Program

## Tables

- Table 1: Panguma Hospital services utilization **2004** (January – December 12 months)  
Table 2: Hospital Outpatients 2007  
Table 3: Outreach Outpatients 2007  
Table 4: OPD and outreach attendances 2007 compared with pre-war situation (1989 – 1991)  
Table 5: Admissions during **September to December (4 months)** 2007 versus 2006  
Table 6: **Admissions** for each of the wards 2007  
Table 7: Top 10 of Inpatient diagnoses all general wards 2007  
Table 8: Death of inpatients 2007 (January-December)  
Table 9: Causes of death among admitted children 2007  
Table 10: Causes of death among admitted patients > 5 years (male, female and maternity ward)  
Table 11: Comparison of admissions figures and death rates 1991 and 2007  
Table 12: Maternity ward outcome 2007  
Table 13: New admissions in TB ward in 2007  
Table 14: Positive Test results of donor blood screening 2007  
Table 15: of units of blood transfused to inpatients  
Table 16: Major Surgery 2007 (7 months April - June +Sept – Dec )  
Table 17: Mobile outreach attendances 2007 (ANC, < 5 and > 5)  
Table 18: Comparison of clinic attendance in five outreach villages 2007  
Table 19: Outreach attendance – comparison 2007 / 1991  
Table 20: Total of Immunizations given in static + outreach clinics

## Figures

- Figure 1: Main actors in Panguma Hospital catchment area and relation with District/Diocese  
Figure 2: Hospital Outpatients January – December 2007 (see also table 2)  
Figure 3: UFC attendance at static clinic 2007 and numbers of underfives treated for illnesses  
Figure 4: **Admissions** in 2007: male, female, children, maternity and TB & leprosy wards  
Figure 5: Deliveries (115) in Panguma Hospital 2007  
Figure 6 : Mobile outreach clinic attendances 2007(on two weekly basis in 5 villages)

## Appendices

1. Staffing situation
2. Local income and expenditure 2007 (reported by KDHCO)
3. Basic statistics: attendances OPD, admissions, deaths etc (separate spreadsheet)
4. Morbidity inpatients
5. Causes of death Inpatients all wards 2007
6. Immunizations 2007
7. Outreach results for all 5 villages and target groups: < 5, pregnant women and some >5

## 1. General review of the year 2007

### 1.1. Introduction

On the 23rd of September 2006 Panguma Hospital was re-opened after a decade of minimal functioning due to the civil war and the murderous events of March 1994. The hospital had been without a resident doctor for over ten years. A doctor visited the hospital sporadically but generally the hospital could not offer essential second line services such as emergency surgery and obstetrics. Many Sierra Leonean doctors left the country during the war and for the remaining ones it appeared more attractive to work in the bigger towns than in the rural areas. It is easier for them to get a decent income in the big towns with proper education for the children. As a result the inpatient services of Panguma hospital remained very limited. Outpatient services (static and outreach) however were utilized a lot as the table below – presenting services uptake in 2004 - shows.

*Table 1: Panguma Hospital services utilization 2004 (January – December 12 months)*

Mobile clinics	Antenatal	185	187	218	195	153	112	126	127	101	174	132	142
	< 5 years	530	523	549	431	696	486	471	448	433	419	356	377
	> 5 years & adult	39	47	85	47	67	55	135	42	33	36	20	20
Hospital clinics	Antenatal	123	90	119	110	146	147	115	102	110	141	130	141
	< 5 years	339	315	378	355	440	328	290	374	289	440	408	463
	> 5 years & adult	113	103	188	200	175	186	43	143	149	194	265	296
Admissions	< 5 years	1	2	2	3	9	3	3	6	7	11	23	28
	> 5 years & adult	3	2	4	4	6	2	2	3	4	10	23	18
	Maternity	1	1	0	0	2	2	1	0	2	4	5	0

The hospital and Panguma town were severely affected by the devastating war. In the main street of Panguma all former (Lebanese) shops are completely destroyed. Almost 5 years after the peace agreement<sup>1</sup> the RC diocese of Kenema started rehabilitating the hospital infrastructure with financial assistance of the humanitarian organization CORDAID from the Netherlands and some other funding organizations e.g. Daughters of Charity, Irish Aid, World Mercy Austria and some individuals. Kenema RC Diocese recruited additional medical personnel for the hospital and a period of intensive rehabilitation took place. Some dedicated nurses who had worked in Panguma hospital before and to some extent even during the war as well were running the hospital as a health centre with remaining services: some outpatients, a few inpatients, a few deliveries per month, under five- and antenatal clinics and outreach services to five villages in Lower Bambara Chiefdom. Only the TB ward was rather well developed: headed by a dedicated nurse and patients receiving TB treatment as a result of a well functioning national TB program and regular food support for TB patients by the World Food Program. In 2006 a medical officer in charge was recruited in the Netherlands to put the hospital functions back in place. Blood transfusion services were re-established and the major theatre was opened by the end of March 2007, after two weeks of training and preparations by sr. Katharina Boehm, the former PHC coordinator of Panguma (1987-1994), who is also a specialist in theatre nursing.

### 1.2. Mission and role of the hospital in the district (and diocese)

Panguma hospital wants to function as a community oriented hospital fully integrated in the district health system and not merely as a tertiary care facility. The hospital aims to provide integrated medical, surgical and preventive health services to the people in the northern part of Kenema district: the chiefdoms of Lower Bambara, Maligohun, Dodo and their environment. While Kenema district has more than 500.000 inhabitants with a District Medical Officer and district hospital in Kenema the population in our catchment

<sup>1</sup> On July 7, 1999 the government of Sierra Leone and rebels signed a peace agreement

area is approximately 100,000 people<sup>2</sup>. Patients however do also come from areas outside this direct catchment area. Increasingly people from as far as Kono, Bo, Kenema and Segbwema attend the hospital and increase the workload of our staff. The highest concentration of people is in Tongo Fields, about 10 km from the hospital. In the past both Tongo Fields and Panguma had a hospital but the Tongo Fields hospital was destroyed during the war and never rehabilitated again. To bridge the gap between the densely populated area of Tongo and our hospital we try to cooperate with the health providers in Tongo and to stress early referrals. Our ambulance is always ready to go there for transport of emergencies.

According to its mission statement Kenema Diocese strives towards *accessible, affordable, equitable healthcare with a particular emphasis on provision of care for the poor and vulnerable people*. In line with this mission statement Panguma hospital wants to really reach vulnerable people such as

- Women and particularly women with maternal problems during and after pregnancy
- Under five children with a particular focus on malaria, the main killer disease among children
- TB patients
- Epileptics
- Fragile elderly
- HIV/AIDS infected and affected people

Reaching these vulnerable people means that Panguma Hospital not only wants to develop adequate *clinical functions*, but also to re-establish the relation with the chiefdoms, the villages, by means of the Primary Health Care team, to strengthen the relationship with the district health authorities and to restore the referral system in the catchment area. In a situation of poverty it is difficult for many people to come to the hospital in an early stage, so a lot has to be gained by prevention of problems. We know that we are not the single player in the field of health services in our area. The situation is different from the situation before the war. The government has developed services in many areas and we try to work in close cooperation with these services. We want to avoid negative competition and duplication. We are gradually building renewed relationships with village governments and their health committees, and with the schools in our areas. So Panguma hospital does not want to be an isolated facility in Kenema District but an integral part of the district health system with a close relationship with other health care providers in the catchment area and the district as well as with the target population in the catchment area of the hospital (see figure on the next page). Chapter 4 provides a more elaborate picture of our PHC program.

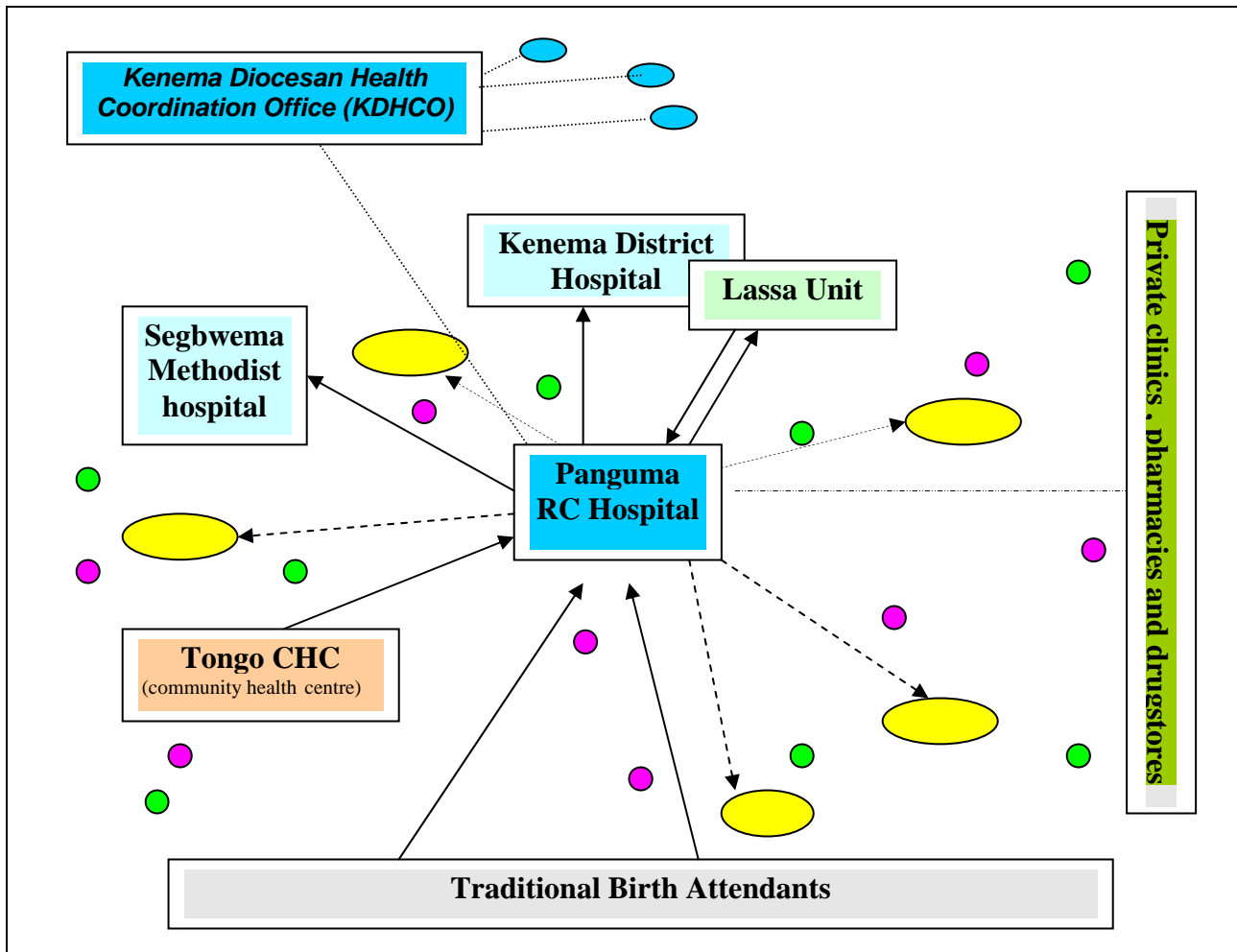
In spite of our efforts some district health officials still perceive Panguma hospital primarily as a mission hospital that is able to take care of itself, as it may have done before the war when it was managed by a congregation of expatriate sisters and three, sometimes four expatriate doctors, and financially supported by quite a few donors. It is not self-evident for the district to consider Panguma hospital as an integral part of the district health system but positive steps have been taken in the course of 2007. Each month our senior nurse Mr. Matthias Seppeh is attending the DHMT (District Health Management Team) meeting in Kenema, chaired by the DMO. Our hospital also aims at cooperation with all the national programs that are operational at district level such as TB, immunizations, maternal health, family planning, malaria, HIV/AIDS, Lassa and Onchocerciasis. These programs pass through the Ministry of Health and not through CHASL (Christian Health Association of Sierra Leone). A particular relationship at district level is being developed with the national Lassa fever control program with a program manager, Dr. Kahn, based in Kenema. This program receives financial and technical support from WHO, EU and Tulane University USA while China donated Ribavirin for the treatment of Lassa fever.

The diagram below summarizes the position of our hospital in the context of other providers and users


---

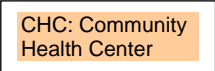
<sup>2</sup> This catchment population is a rough estimate. No census has been done since the war and there has been a huge mobility of people.


Figure 1: Main actors in Panguma Hospital catchment area and relation with District/Diocese





Legend:


- 

Outreach stations 2007  
Kambona, Njagor, Bomie, Foya, Baoma (some additional stations – Tonkpombu, Saama, Kaniya, Targahun, Yorgoima, Taiama - were only reached once or twice in 2007)
- 

CHC: Community Health Center      Community Health Centers (CHC) : Tongo, Dodo, Weima, Foidu and others....
- 

Community Health Posts (CHP)  
Number of CHP in catchment area of Panguma Hospital not known. Total # of CHP in the district: 35 (2004)
- 

Maternal and child health posts (MCHP)  
Number of MCHP in catchment area of Panguma Hospital is unknown. Will be mapped in 2008
- 

Kenema RC Diocesan health units: Pendembu (Kailahun district), Boajibu (Kenema), Yengema (Kono)
- 

Private clinics, pharmacies, drugstores...

Our relationship with the Diocesan Health Office (KDHCO) is ongoing and indispensable. However, with the other health units of Kenema Diocese our hospital has not much contact yet. The three small health units run by the RC Diocese of Kenema<sup>3</sup> are rather far from Panguma Hospital and the activities undertaken at that level are primarily steered by KDHCO.

Slowly the population is (re)gaining trust in Panguma Hospital. Comparing the situation now with the situation described in the last annual report (1991), we may conclude that we have done a good job. Especially with the knowledge that the foreign congregation (in Panguma till 1994) is not present now, that the number of senior personnel is very limited and knowing that there is a huge concentration of dispensaries, pharmacies and drug paddlers all offering and selling drugs.

### **1.3. Hospital Management**

In 2007 the daily management of Panguma Hospital was primarily done on location by the team of the Matron, the Administrator and the doctor in charge. But interim overall director was the Diocesan Health Coordinator though residing in Kenema and not in Panguma. She played a crucial role in human resources management, fundraising, essential drug supply, coordination of rehabilitation of the hospital and many more management issues. This structure of a distant director is temporary as eventually a full fledged management team will be developed at Panguma hospital level itself.

The hospital relies heavily on foreign donors, not only for the rehabilitation but also for the running of the hospital. Unlike in many other African countries the government of Sierra Leone does not subsidize mission hospitals. No bed or staff grants are given. The dependency on external donors has always been the case, also before the war. Meanwhile we keep on trying to get a fair share from the district programs and hopefully CHASL in Freetown will try to convince the Ministry of Health to give also funds to church owned hospitals for running costs. We all work for the same Sierra Leonese people.

We established a Hospital Advisory Committee made up of key people in the community we want to serve. Though we do not have a fixed number of meetings with this committee we have regular contact with several of its members and sit with the committee on an ad hoc basis when necessary.

### **1.4. Hospital and Compound**

Kenema Diocese has put huge efforts in rehabilitating the destroyed hospital infrastructure and grounds with highly appreciated support of Cordaid and other donors. The entire year of 2007 building and reconstruction activities have been ongoing mainly in accordance with priorities in further development of the hospital services. By the end of 2007 the hospital has a bed-capacity of 130 beds, spread over the following wards:

- 31 beds in Children's ward
- 29 beds in Male Ward
- 22 beds in Female Ward
- 17 beds in Maternity Ward
- 31 beds in TB Ward

-----  
130 beds, but more space and spare beds available

As space is available, beds can be added especially to the children's ward. The 'Infectious Diseases' ward building has not been used in 2007. Lassa patients and suspected Lassa patients are referred to the Lassa Ward in Kenema Government Hospital (KGH).

Not all wards have been utilized all time in 2007. According to patient load and staff capacity the management has tried to primarily focus on efficiency and keep the working space restricted to make maximum use of the limited staff. On and off the large children's ward and the isolation ward have been

---

<sup>3</sup> Boajibu, Yengema and Pendembu

used when the patient load demanded more space than the old wards could provide. In such cases children and also adult patients moved to so-called overflow wards once their condition did no longer demand intensive care and supervision.

Environmental hospital staff keeps the compound relatively clean and tidy. The rehabilitated and some newly built pit-latrines are generally used well by patients and relatives though sometimes patients or relatives do not use them. This is a point of concern requiring ongoing health education.

A number of staff made good use of the swampy and other available areas on the hospital compound for growing various vegetables and rice

*Plans for near future*

- *More staff houses*
- *Hospital canteen*
- *Increased local capacity for maintenance of the hospital*

### **1.5. Electricity and water**

There is running water in all wards and access to water in all staff quarters. The water-supply has not been 100% guaranteed as problems at the source of the gravity water system could not been fully controlled.

A generator is providing light in the hospital and staff quarters between 19.00 and 21.00. In case of acute need electricity e.g. for operations at night, blood transfusions or other emergencies a smaller generator is lighted. Generally both water and electricity have been provided without major problems for patient care. Staff has had difficult moments without easy access to water.

A third generator will be installed for the staff quarters where the doctor and matron are living.

To be less dependant on expensive fuel for the generator solar energy need to be considered. Sierra Leone has little experience with solar systems because the country was well covered with electricity before the war. And ever since the war small generators are running everywhere..

The hydropower station in Gwala is being rehabilitated by a Chinese company and will hopefully in future bring electricity to Panguma once Kenema and Bo will have been provided with electricity.

*Plan for near future*

- *More access to tapped water and sanitation facilities for staff living at hospital compound*
- *Generator or alternative energy for staff quarters of matron/doctor/future director*

### **1.6. Staffing**

There has been a dramatic increase in the number of patients accessing the hospital services since Hennie Zonderland, our first doctor since the war, started work in September 2006 with financial support of Cordaid in the Netherlands. Whenever the doctor is absent, treatment is given by our CHO, senior nurses or - as in July and August 2007 – one day a week by a visiting doctor from Kenema Government Hospital. The matron, Hawa Rogers, also a trained Nurse Midwife and anesthetist, arrived in October 2006. She once started her career as a Nurse assistant in Panguma Hospital in 1979. We appreciate it very much that she made the circle round in Panguma after 27 years of medical training and hard work all over the country, also during the difficult period of the war. We awaited the arrival of an overseas director / administrator in December 2006 but unfortunately the appointment did not effectuate. This leaves a lot of work to be done by the Diocesan Health Coordinator and interim director of the hospital of the Diocese, sr. Theresa Flynn. Our administrator Mr. Vincent Sevaly, a Sierra Leone professional, arrived April 2007.

Our staff is motivated and dedicated; many of them have served the place before the war, during the war (whenever possible) and now again. The staff capacity has gradually grown in 2007 but is still a point of

concern. We still lack a hospital director. The acting interim director (sr. Therese Flynn) can only spend a few days per month in Panguma, as she is also the Health Coordinator of the whole diocese. She has to deal with other health facilities of the Diocese as well.

We have only one (expatriate) doctor, while before 1994 usually three or four (usually expatriate) doctors were around. A local doctor expressed interest in March 2007, but the Ministry called him elsewhere, to a place without a doctor. Cordaid promised to support the hospital in any case till September 2008 with a doctor. When the doctor is not around or when the matron (also anesthetist) is not around, then emergency operations still have to be referred to Kenema. A second doctor has to be attracted from Sierra Leone itself or from outside the country; a senior nurse (Matthias Seppeh) has already been trained in anesthesia, but due to his many tasks and responsibilities, he has not been able to do a lot of practice in Panguma.

In June 2007 the first CHO (Community Health Officer) arrived, but he left already in August. Another CHO joined the staff later in 2007 and has greatly strengthened the outreach and other community oriented activities. More nursing staff has been employed in the course of 2007 as well as hospital support staff (cleaners, environmental workers, guards etc).

The departure in June of the Primary Health Care Coordinator (Juliana) who was employed in March 2007 was a big blow for the outreach team. Before March the team went only to five villages in Lower Bambara Chiefdom, but under leadership of the new PHC nurse Juliana the program was extended to the chiefdoms of Dodo and Malegohun. After her departure the program went back to the same level as before March, which is not good for our relation with the villages in the neighboring chiefdoms.

An overview of the staffing situation per 31.12.07 is found in the appendices

### **1.7. Transport**

The heavy rains between July and October made travel very difficult, especially over the main road between Panguma and Kenema. The longer alternative route remained passable all year and no emergency transport of patients had to be cancelled. Outreach by car was not always possible but the motorbikes offered a good alternative.

We were very fortunate to get an Ambulance this year as a gift from Sisters of Mercy. The ambulance is primarily used for referrals to Kenema or Segbwema hospital and for transport of maternal emergencies from the community to the hospital. In June we almost lost our ambulance when the car overturned and got seriously damaged. Fortunately no one died though the car was full of people.

In addition to the ambulance, the hospital had on- and off access to a Toyota pickup of the Diocese while waiting for a new pickup that is on its way.

The outreach team moves by motorbike and has now and then to face challenging road conditions in the rainy season. We were also given an outreach bicycle by UNICEF which is used for some ad hoc needs.

### **1.8. Education and training**

As many of our staff were trained long ago and some up to a level that does not fully correspond with the competences needed for the job, the hospital management is trying to spend time on coaching on the job through bed side and class room teaching. On a daily basis the doctor sees serious or complicated cases together with the senior nurses or CHO and the supervision of the matron has certainly contributed to better performance of the nurses and nurse assistants.

In addition to in-house training several staff attended training workshops and seminars outside the hospital. The appendices include a list of training attended.

When time allows the medical staff meet in the morning after prayers for case presentations or other brief training sessions. These sessions offer very fruitful opportunities to discuss difficult cases and teach.

There are several books and handouts on different subjects available for those who want to read but the actual utilization is limited. We have to find ways to get staff more interested in upgrading their knowledge by reading and case presentations.

In 2007 we hosted a few CHO students and student nurses for some months. They can learn a lot in our hospital and they generally appreciated their stay a lot. Some motivated young people were accepted as volunteer nursing assistants in order to give them a chance to get some basic knowledge and practical experience that may help them get accepted for formal nurse or nursing assistant training. They have been helpful for the hospital as well because many hands make work lighter.

### **1.9. Hospital equipment**

The X ray equipment was severely damaged during the war, beyond repair. First priority is now an ultrasound machine, especially for a better diagnosis in obstetrical and many abdominal problems. We managed quite well to function without an X-ray which would require additional human and financial resources that we do not have this year.

## 2. Finances

We rely heavily on foreign donors, not only for the rehabilitation but also for the running of the hospital. Panguma hospital is not a private commercial institution and as we want to reach out to the real poor we should not make medical care inaccessible because of high fees. The difficult financial situation in and around Panguma is not only because of the war. The annual report 1991 shows the same heavy input of donors before the war. We only can try now to get our fair share from the national and district programs and hopefully CHASL in Freetown will try to convince the Ministry of Health to give also funds to church owned hospitals for running, as it is the case in many other African countries (the system of bed- and staff grants, the system of government designated church owned hospitals). We all work for the people of Sierra Leone. In the meantime we may try to render the community aware and used to the flat rate system for inpatients, instead of the commercial shop-oriented system which is so common nowadays in Sierra Leone.

The financial management of our hospital is to a large extent in the hands of the Diocesan health coordinator/interim hospital director resident in Kenema. The hospital staff is responsible and accountable for proper administration of income and expenses and reports on a monthly basis to KDHCO,

People pay for most of the curative services in our hospital while preventive services are free of charge except for a small registration fee. However, we will never refuse to provide emergency care to someone who simply does not have the money. Treatment comes first, payment will follow and we negotiate with those who do not have financial resources readily available on how the costs can be covered.

We have not yet established a flat rate system as patients still pay according to the amount of consumables used for their treatment but we try hard to make exemptions when really necessary. Preventive services – ANC and underfives weighing and immunization - are free except for a very small registration fee.

An overview of income and expenditure in 2007, made up by KDHCO, is presented in the appendices.

### 3. Hospital activities

#### 3.1. Outpatients

The hospital has an outpatient department (OPD) providing both preventive MCH services and curative services. On average the OPD services were utilized by approximately 700 adults per month, 377 children and 174 pregnant women. The 377 children include those who just came for immunization and/or growth monitoring as well as those who attended because they were ill. This makes it difficult to distinguish between preventive and curative care sought at the hospital. In future the data on children attending the OPD will need to be more differentiated for curative versus preventive attendance. The same holds for pregnant women but they generally come for preventive ANC services and not because they are ill.

Tables 2 and 3 present an overview of the total attendances per month per category of service users, for the static services in the hospital and the mobile services rendered by the outreach team of the hospital.

*Table 2: Hospital Outpatients 2007*

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
< 5 years	455	478	484	444	456	466	326	264	348	371	316	158	<b>4537</b>
> 5 years & adult	634	692	617	908	1162	1031	782	362	303	699	739	503	<b>8432</b>
Antenatal	157	259	247	185	188	146	122	110	116	122	130	129	<b>1911</b>
<b>Total</b>	<b>1246</b>	<b>1429</b>	<b>1348</b>	<b>1537</b>	<b>1806</b>	<b>1614</b>	<b>1230</b>	<b>736</b>	<b>767</b>	<b>1192</b>	<b>1185</b>	<b>790</b>	<b>14880</b>

*Table 3: Outreach Outpatients 2007*

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
< 5 years	138	256	217	105	348	213	155	56	212	208	181	132	<b>2221</b>
> 5 years & adult	7	7	16	8	39	9	11	5	7	8	7	6	<b>130</b>
Antenatal	83	155	71	67	126	131	79	37	59	95	91	94	<b>1088</b>
<b>Total</b>	<b>228</b>	<b>418</b>	<b>304</b>	<b>180</b>	<b>513</b>	<b>353</b>	<b>245</b>	<b>98</b>	<b>278</b>	<b>311</b>	<b>279</b>	<b>232</b>	<b>3439</b>

The OPD for adults and under-fives is essentially run by our senior nurses with support of the doctor who treats outpatients with serious problems referred to him by the senior nurse. They review the patients together as a way of training on the job. Besides two nurses at the OPD (one for children, one for adults), there is a registrar, a cashier, a nurse-pharmacist and two pharmacy assistants and a cleaner. Ideally one or two Community Health Officers (CHO) should run our OPD but it proved very hard to recruit and keep CHOs till now. In the period April to June we hosted two CHO students from the CHO training school in Bo. One of them came back to Panguma after his training and another CHO joined us later. In fact a number of three CHO would be appropriate for our hospital. One for OPD, one for inpatients and one for the outreach team. The doctor could coach and supervise them on the job to strengthen their medical competencies. Especially in periods without a doctor one or more experienced CHOs are important for the running of the hospital.

The under-five clinic (UFC) is equipped with a solar refrigerator which we received through the DMO together with cool boxes for outreach. The fridge stores vaccines for children and pregnant women who attend the static clinic in the hospital or the outreach clinics. Scales for growth monitoring are available but growth monitoring is not yet very well developed. It will need more attention in the coming year. When time allows, some health education is conducted during the clinic. Next to the preventive care area is a room for the senior nurse who treats sick children, when necessary together with the doctor.

The majority of our outpatients attending for curative services continue to come from Tongo diamond mining area as was the case before the war. Sanitation and water supply are very poor in that area and

mobility of people very high. A large proportion of the child mortality in the hospital is found among children from that area or beyond Tongo and this observation urges us to think more how we can improve the primary care in Tongo Fields area that is covered by government health facilities and by a wide range of private providers. It is the primary responsibility of the District health authorities to supervise the health care delivery in that area and to support health workers in order to deliver quality care.

Our hospital proved this year to have a very clear important ambulatory preventive and curative role in the area and not only a tertiary care function. There has been a gradual increase of outpatient attendances since the opening of the hospital in 2006. However in 2007 the attendance somehow stabilized (not significantly increasing) though fluctuating per month according to season, financial resources of the people and presence of the doctor. In total we provided services to almost 15.000 people at our outpatient

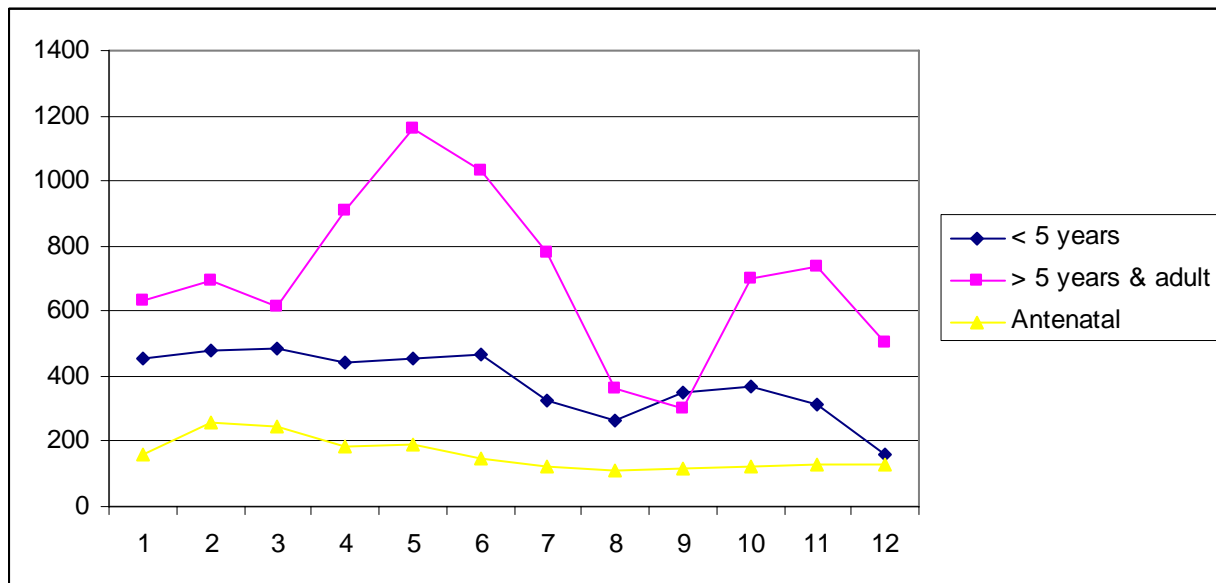
The OPD was in 2007 as busy as in 1989/1990 and the difference between 2007 and 1991 is far less for the OPD (66% of 1991) than for its outreach (approx.10% of 1991). The hospital outreach program covered in 1991 a very large number of communities (35) compared to this year 2007 (5). Preventive services such as immunizations and ANC are now also provided by government health institutions so the need to reach out to peripheral villages for immunization and ANC has decreased.

Table 4: OPD and outreach attendances 2007 compared with pre-war situation (1989 – 1991)

	2007	1989	1990	1991
OPD attendance	14.880	13.481	17.468	23.038
Outreach (<5/>5/ ANC)	3.494			> 30.000

When we process and analyze the huge amount of information collected daily and monthly by our hospital staff (for various national programs, for KDHCO and the donor and not in the last place for the hospital management) we get a very useful and interesting insight in the performance of our hospital at present and over time. The tables above and figures below tell us a lot.

Figure 2: Hospital Outpatients January – December 2007 (see also table 2)



Clarification of the figure

- The line for children < 5 years includes both preventive and curative services. Figures on attendance of the curative services by underfives was not reported this year. Only overall attendances were reported. In 2008 this differentiation will be done on a monthly basis.

- The above 5 years category includes all patients older than 5 years. Children older than 5 years and adolescents are generally not taken as a separate age group in hospital information systems. This age group is generally quite healthy. Morbidity and mortality among children is generally highest among very young children below 2 years.

*Analysis of the figure*

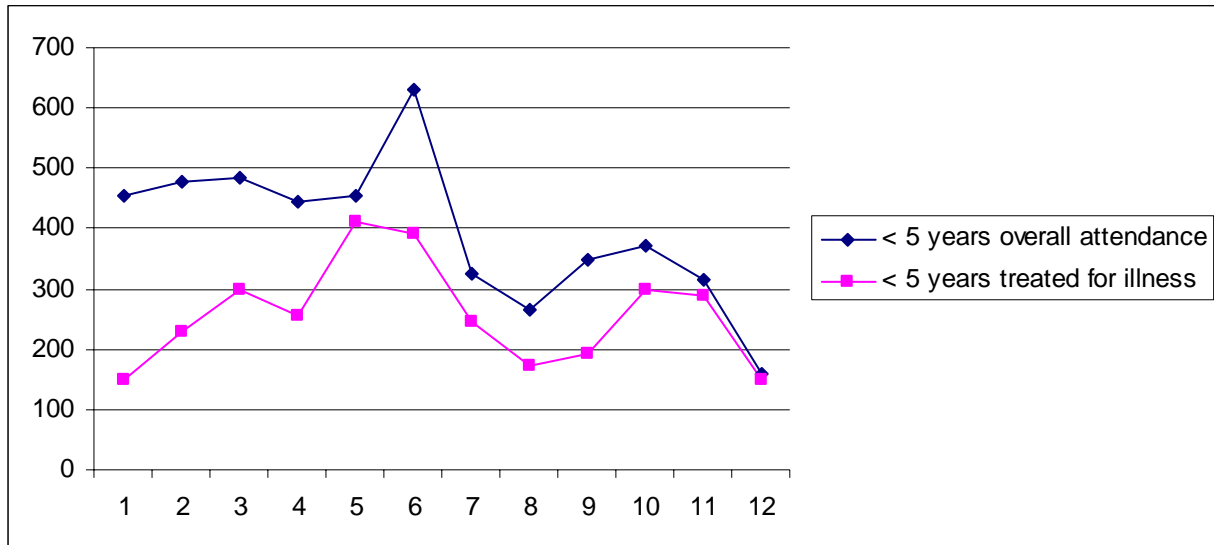
- The dramatic drop in attendance in the period July-August-September corresponds with the two months absence of the only doctor in the hospital. He had to leave the country because of the presidential elections in Sierra Leone. A second drop in December – January when the doctor was absent again, for three weeks. However, it may not be the main cause. Also before the war the month of August was a relatively quiet month in terms of attendance due to several factors: (i) the peak of the rainy season making travel very difficult; (ii) poor financial resources because farmers have little to sell and no more food stocks; (iii) August is planting time and (iv) the Muslim period of fasting (Ramadan) when Muslim families do not eat or consume medication during the day, making adherence to treatment prescriptions difficult.

It may be worthwhile to investigate whether this trend is seen in other hospitals as well e.g. in Segbwema hospital, run by the Methodist church.

- In terms of numbers the adult OPD is generally busier than the under-fives clinic and attendance is lowest at the ANC because this target group is simply smaller.

The static clinic staff does not monitor whether the under-fives attend for preventive and/or curative services. However, the senior nurse who treats the sick children keeps a register which tells us that 65% of the under five children attending this year were seen and treated by the medical staff. The same trend is observed in the outreach clinics with an even higher percentage of attending underfives who are reported ill (approximately 80%). Relatively few children are just weighed and immunized; the majority goes home with some drugs for present or past signs and symptoms of illness (malaria and respiratory illness).

Figure 3: UFC attendance at static clinic 2007 and numbers of underfives treated for illnesses



The figure shows that in the course of 2007 the (caretaker of the) children who attend the clinic increasingly seek/need treatment by senior nurse, CHO or doctor. The % of children merely attending for preventive services (immunization and weighing) is decreasing. Do mothers only come for vaccinations when their children are ill and need treatment? Do mothers report fever (malaria) and/or cough of the

child during the past weeks in order to go home with some drugs? Understanding the trend above will need further attention in 2008.

The OPD under-five register for sick children includes the main diagnosis and treatment prescribed and shows that the main health problems presenting at the OPD for children are (i) malaria, (ii) acute respiratory infection (ARI) and (iii) anemia. Skin problems, malnutrition and eye problems are also quite frequently diagnosed. Diarrheal diseases however are rarely diagnosed.

The register also shows that many children get a diagnosis and treatment of both malaria and acute respiratory infection (ARI). Staff agrees that the diagnosis is not always well supported by clinical signs and symptoms but that a treatment dose for malaria may have a prophylactic function and satisfies the expectations of the mothers. The MoHS of Sierra Leone is moreover recommending to treat any child that had fever during the past 2 weeks for malaria (based on a few standard questions developed by MoHS) and not to immunize any child with high fever. This issue of multiple diagnoses and multiple treatment (poly-pharmacy) as common practice at the static and outreach OPD will be included in the topics for internal staff training in 2008.

Above 5 years and adult morbidity diagnosed at the OPD was mainly malaria, Peptic Ulcer Disease (PUD), respiratory tract infections (including TB) and Schistosomiasis (Bilharzia) but also hypertension, sexually transmitted illness (STI) , hernia and Urinary Tract Infections (UTI). Monthly reporting on morbidity has not taken place but treatment ledgers are filled on a daily basis. Monthly reports on infectious diseases were sent to the DHMT but not reported internally to KDHCO. In future an improved system of monitoring and reporting on morbidity among out- and inpatients will need to be developed.

The majority of small children seen at the OPD come with complaints of fever during the past few days or weeks. Malaria is probably the cause of fever as it is very endemic in this area and small children have not yet built up their immunity for malaria. Respiratory infections, mainly upper but also some more serious lower respiratory tract infections are common as well. Gastro enteritis (GE) or diarrheal diseases are surprisingly not very common. Given the overall poverty and poor sanitary conditions one would expect more diarrhea and dehydration in small children. Access to clean water is probably an underlying cause of the low incidence of GE as well as awareness of families raised through many years of health education. Skin infections and worms are diagnosed quite often, while malnutrition proves quite seasonal with a peak in the period of June – September.

Both for children and adults attending static or outreach services of our hospital the monthly reports focused on information regarding the volume of attendance and far less on why children and adults attended the clinics but a glance at any of the treatment registers immediately reveals the above mentioned common illnesses diagnosed by Panguma hospital staff.

### 3.2. Inpatients, general wards adults and children

Panguma hospital has gradually developed into a fully functional hospital with different wards, a fully operational theatre, an ambulance and a growing number of competent staff. As a result 2007 was a very busy year and the number of admissions in the last 4 months of the year increased compared to the last 4 months of 2006, except for the maternity ward (see table 5).

Table 5: Admissions during **September to December (4 months)** 2007 versus 2006

<b>Admissions</b>	<b>Sept – Dec 2007</b>	<b>Sept – Dec 2006</b>
Adults and children > 5 years	222	156
Children < 5 years	180	154
Maternity	72	75

The table and figure below present the trend in admissions over the year 2007 and shows clearly that there is great 'seasonal' variety, not only determined by weather conditions but also by financial resources of people, expected quality of service and possible other factors.

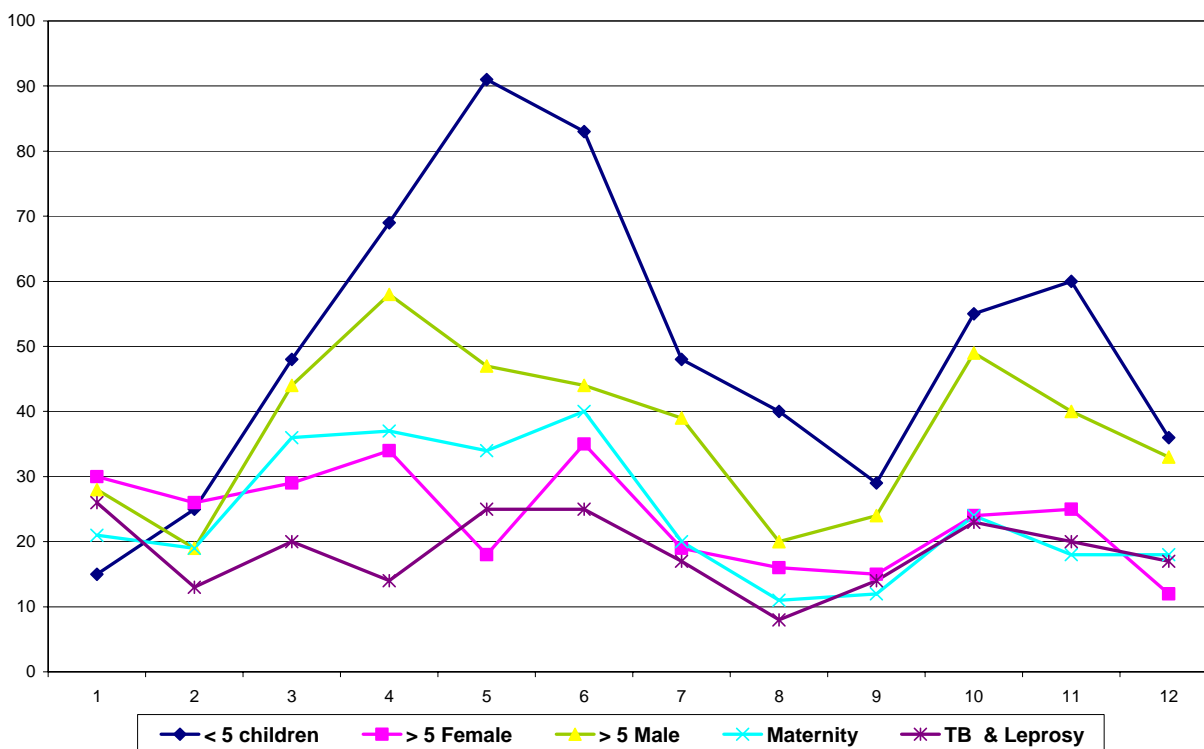
Table 6: Admissions for each of the wards 2007

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Tot
> 5 Male	15	25	48	69	91	83	48	40	29	55	60	36	599
> 5 Female	30	26	29	34	18	35	19	16	15	24	25	12	283
< 5 children	28	19	44	58	47	44	39	20	24	49	40	33	445
Maternity	21	19	36	37	34	40	20	11	12	24	18	18	290
TB & leprosy	26	13	20	14	25	25	17	8	14	23	20	18	223
<b>TOTAL</b>	<b>120</b>	<b>102</b>	<b>177</b>	<b>212</b>	<b>215</b>	<b>227</b>	<b>143</b>	<b>95</b>	<b>94</b>	<b>175</b>	<b>163</b>	<b>117</b>	<b>1840</b>

Bed state: On average, including TB patients, the daily bed state in September 2006 was 21 patients, in February 2007 it was 42 patients, in July 84 patients and in December 78 patients

We tried to keep all these inpatients in the male, female, maternity and TB ward, as the number of personnel was limited, but in the second half of 2007 we already used regularly the rehabilitated children's ward, esp. for those children who were recovering properly and did not need close attention of a nurse.

Figure 4: Admissions in 2007: male, female, children, maternity and TB & leprosy wards



Analysis of figure 4:

Children represent almost 1/3 of all admissions and they generally require intensive and continuous care. Adults in the general wards make up around 40% of the inpatients, maternity cases around 16% and TB cases 12%. Men are significantly more admitted than women. This phenomenon is probably due to the fact that men have more access to financial resources and maybe even time than women. We do not think that men are generally less healthy than women.

The trend in inpatient numbers over the year is not a linear line but one of fluctuation (see figure above) according to 'season'. Similarly to the outpatients, there are two distinct periods of a remarkable decline in admissions: in July to September and in December, in 2007 periods with no doctor in the hospital. The doctor left the country because of the elections and his annual leave. But we know that not only the doctor's absence has played a role. The local communities felt less secure in the period of elections (July-Sept) and were reluctant to travel more than necessary which may also have affected the attendance rates. Moreover the rains were at its heaviest in this period which made travel difficult. July and August also represent the period of greatest poverty at household level because families do not have access to sufficient food in these months and have to spend money the little they have on food and seedlings for rice planting. They tend to rely more on local herbs for treatment of illness. When comparing with 1991 we see that both in 1991 and in 2007 admissions decreased in number in July and August

Before the war in **1991** the total number of admissions was 3396, almost double the number of 2007 (1840) but in both years the seasonal peaks in admissions were in the period of April – June and October-November. It is plausible that people in Panguma catchment area are either most at risk of getting seriously ill in these two periods or that resources (time, money, caretaker) are most available.

### ***Inpatient morbidity***

Patients were admitted for a wide scope of different diseases and complaints and there were big differences between adults and children as the table below is showing. Peptic ulcer and gastric problems as well as cardiac problems, TB and hypertension appear to be typical common adult problems in our area while respiratory tract infections and serious malaria are more typical for children. Hernias and Hydrocele are more common among men than among women while AIDS was seen more among women than men in our wards. In spite of their supposed immunity malaria remains a problem for some adults unless the diagnosis is made to easily. A positive blood slide may be taken as proof while it is not specific enough.

*Table 7: Top 10 of Inpatient diagnoses all general wards 2007*

	<b>Male Ward</b>	<b>Female Ward</b>	<b>Children &lt; 5</b>	<b>Maternity</b>
1	Peptic Ulcer Disease	Malaria	Malaria	Delivery / labour
2	Malaria +/- anaemia	Peptic Ulcer Disease	RTI/ARI/pneumonia	Malaria
4	Hernia	Cardiac Failure CCF	Malnutrition	Abortion
5	TB	Hypertension	Meningitis	STI
6	Cardiac failure	Anaemia	GE / EH / DD	Anaemia
7	Pneumonia /ARI	Schistosomiasis	Hypoglycemia	Retained placenta
8	Typhoid	TB	TB	Urinary Tract Infection
9	Hypertension	AIDS	Lassa	
9	Trauma	Cancer	Typhoid	
10	Hydrocele	Others including Lassa	Herbal intoxication	

### ***Hospital death***

We had to cope with many deaths in Panguma hospital which may be expected in the context of huge poverty and after 10 years of war affecting health seeking behavior of people. As the table below indicates mortality was highest among admitted under-five children and particularly among children under the age of 2 years. According to the UNICEF publication *'The State of the World's Children'* available at <http://www.unicef.org/sowc/> the worst U5MR in 2006 was found in Sierra Leone: 260/1000 live births. This means that 26% of all children born alive die before they turn 5 years old. It is hard to believe that families have the resilience to cope with this. An alarming U5MR rate was sadly enough also observed in our hospital in 2007 when on average 20% of admitted children died versus approximately 11% of admitted adults in the general wards.

Table 8: Death of inpatients 2007 (January-December)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Tot	Death rate
<b>&lt; 5 years</b>	3	4	10	19	20	22	13	12	2	6	7	5	<b>123</b>	<b>20.5%</b>
<b>5 -15 years</b>		1		1	1						2		<b>5</b>	<b>-</b>
<b>Men &gt; 15 years</b>	3	3	4	3	7	3	3	3	2	4	6	5	<b>46</b>	<b>11%</b>
<b>Women &gt; 15 yrs</b>	1	2	2	3	2	5	2	4	5	3	1	2	<b>32</b>	<b>12%</b>
<b>Maternity</b>	1	0	0	0	1	2	0	0	1	0	0	0	<b>5</b>	<b>1.7%</b>
<b>Total</b>	<b>8</b>	<b>10</b>	<b>16</b>	<b>26</b>	<b>31</b>	<b>31</b>	<b>18</b>	<b>19</b>	<b>10</b>	<b>13</b>	<b>16</b>	<b>12</b>	<b>211</b>	

Young people in the age group of 6 to 15 years of age are usually admitted in our adult wards but they are very few in number and less at risk of dying. Once a child has reached 5 years it has a great chance to grow up healthy. The mortality among admitted men and women is similar in terms of % (11% of admitted women), not in crude numbers because more men are admitted in the general ward than women. In 1991 male and female mortality rates were also not significantly different (5% men versus 4% women) but significantly lower than in 2007.

Overall approximately 11% of all admitted patients (including TB patients) died (210 out of 1840)

April - June (see figure 5 below) shows a peak in admissions and deaths primarily among under fives who are in that period so much at risk of getting severe malaria and related anemia. But admissions and number of deaths also rose in October - November, both among children < 5 and adults.

The many deaths and high annual death rate (20% for children and approximately 11% for adults) not only affect the relatives but also the hospital staff. They need the mental strength to cope with this. In spite of their commitment and dedication to quality care for the admitted children and adults, many patients die. We will have to see and discuss how we can reduce the mortality rate. We will need to be more active still in the hospital but also in the communities.

### **Causes of death**

The death toll in the hospital is highest among the very young children (20% death rate) and the main killer is malaria and the complications of malaria such as severe anemia, hypoglycemia and cerebral malaria. As the table below shows 50% of deaths was malaria related. We joined the national campaign of impregnated bed nets for under-fives and pregnant women and our first line treatment is the combination of Artemisine / Amodiaquine.

Another cause was 'black vomit', though more a symptom than a direct cause. We observed that almost all small children who vomited black died though we could not fully understand why. Herbal intoxication leading to gastric retention with black fluid may be the underlying cause. But maybe there are underlying causes that we do not understand fully yet. Lassa, though black vomit is only very sporadically mentioned as symptom of Lassa in the literature. Yellow fever should also not be excluded but blood analysis is not yet possible in the Lassa ward in Kenema.

Increasingly – and at least partially due to seasonal variation - *malnutrition* is seen as an underlying cause of disease, probably sometimes due to TB. The screening of the weight of children in under-five clinics in the chiefdom is generally poorly done. Children attend for weighing but the weight is not entered on the under five card. An early warning system for malnutrition is not yet in place. Meningitis and gastroenteritis also caused several deaths and so did pneumonia, TB and lassa fever. Among the newborn babies some died due to prematurity.

Adults died of quite different reasons. Number one are TB related complications such as pneumonia and sepsis. Cardiac failure caused 11% of all adult deaths and AIDS is an increasing killer disease as well in the area. Stroke, lassa fever, kidney and liver failure account for 13% of all adult deaths. Sadly enough we lost 5 women due to a maternal death in the hospital.

Table 9: Causes of death among admitted children 2007

Children < 5 years	Total number	rank	% of all deaths <5 years (123)
Malaria complications	62	1	50%
Local herbs/ black vomit	11	2	9%
Meningitis	9	3	7.5%
Gastro-enteritis GE	9	4	7.5%
Malnutrition	8	5	7%
Pneumonia	6	6	5%
TB	5	7	4%
Problems newborn/ prematurity	4	8	3.3%
Lassa Fever	2	9-10	1.6%
Sepsis	2	9-10	1.6%

Table 10: Causes of death among admitted patients > 5 years (male, female and maternity ward)

Adults and children above 5 years	Total number	rank	% of all deaths > 5 years (90)
TB complications e.g. pneumonia/sepsis	18	1	20%
Cardiac Failure	10	2	11%
AIDS	6	3	6.7%
Maternal death (3 sepsis, 1 eclampsia, 1 PPH at home)	5	4	5.6%
Stroke	4	5-8	4.4%
Lassa Fever	4	5-8	4.4%
Cirrhosis / liver failure	4	5-8	4.4%
Kidney failure	4	5-8	4.4%
Gastric bleeding	3	9	3.3%

The death rates among adults and children vary according to the season. In August the mortality rates reached a peak of 30% death of admitted children and 20% death of admitted adults in our hospital while the actual numbers of admissions dropped in that period. One explanation may be that people delay in coming to the hospital resulting in worse conditions on admission and/or decide not to go at all to the hospital in August resulting in decreasing numbers of admissions. In an appendix some additional figures on death rate analysis are available.

Comparison of admission figures of 1991 and 2007 (see table below) shows that the death rate among inpatients was higher in 2007 than in 1991 for all categories of inpatients. Causes may be: delay in utilization of hospital care due to greater poverty; lower hospital capacity in terms of professional competence as well as staff capacity (fewer doctors, less CHO etc), worse socioeconomic conditions resulting in poorer sanitation and hygiene etc. We do not know whether patients who died on the day of admission were included in the 1991 figures. In 2007 we included all deaths right from the moment of admission onwards. Data collection may make a difference but cannot account for the entire difference. We have to see whether death rates will change next year 2008.

Table 11: Comparison of admissions figures and death rates 1991 and 2007

	2007			1991		
	Inpatients	Deaths	Death rate	Inpatients	Deaths	Death rate
Male Ward	445	52	11 %	942		5%
Female ward	283	32	11 %	731		4%
Children Ward	599	122	20 %	1078		14%
Maternity	290	5	1.7%	588	9	1.5%
<b>Total</b>	<b>1859</b>	<b>213</b>		<b>3396</b>		

### **Health information system**

Keeping inpatient registers up to date is essential for internal monitoring and reporting. Unfortunately the various registers at the inpatient wards but also at the outpatient department are not always well kept. There is certainly room for improvement. Staff is so busy that the registers are not always fully filled e.g. diagnosis at discharge is not always mentioned in the registers and some death are not mentioned. This needs to be addressed in 2008 if we want to learn from the data which we collect, process and analyze.

### **Referral**

The hospital has an ambulance which is used to refer emergencies (usually maternity and surgical patients) to Kenema or Bo Hospital. Usually we have to do it because the doctor is not around, sometimes because the problem is beyond our surgical capacity. The ambulance is used as well to collect emergencies (especially maternity) in our catchment area. Till now this service is free for the patients. There should be a collaboration with the community to address as to how the community can help in the running of the ambulance. It is usually difficult to request the payment from an emergency patient or the relatives, but a village may well be able to organize itself in having a fund for emergencies.

In 2007 we referred a total of 54 cases to Kenema or Segbwema:

- 4 children < 5 years
- 22 > 5 years
- 28 maternity cases

### **3.3. Maternity (see also paragraphs above)**

Pregnant women and breastfeeding mothers are a very important focus group for the hospital. A healthy mother with properly spaced children is very important for the health in her family and so for the whole society. **The** staff at Antenatal clinic (ANC) screen pregnant women on Mondays and Fridays and admit them if there is a need. The same happens at the five outreach clinics.

Our matron is the only graduated midwife but the present staff at the maternity has years of experience and have become very competent on the job. The staff will need further training as midwives in order to give even better care to our patients but also to be able to train other women in the communities (TBAs). The hospital needs an ongoing dialogue with the community about maternal problems and about referral in an early stage. We are always ready to collect a pregnant woman with delivery problems. Our ambulance does not charge for these emergencies. Most pregnant women with problems come however in a late stage with as a result a dead baby and sometimes even a dead mother! This is unacceptable if we consider all the energy which has been put in revival of the hospital and its outreach services.

The target population of Panguma Hospital is living in three chiefdoms with a total of about 100,000 inhabitants. We expect about 5% of them to deliver annually. This makes 5000 deliveries. An accepted estimate is that 1-3% (50-150 women) of these deliveries may need a caesarean, in order to prevent maternal death or disability (for example a vaginal fistula with leakage of urine or stool). Since the hospital became fully functional women in our catchment area can benefit from surgery, blood transfusions and an ambulance for bringing them for free to Panguma or even to Kenema when the doctor is not around. We now offer caesareans sections, removal of ectopic pregnancies<sup>4</sup>, vacuum delivery etc. Quite a few cases of eclampsia (toxicosis in pregnancy) presented in the maternity, one died of eclampsia<sup>5</sup>

---

<sup>4</sup> An **ectopic** pregnancy is a complication in which the fertilized ovum is implanted in any tissue other than the uterine wall

<sup>5</sup> **Eclampsia** is the occurrence of seizures (convulsions) in a pregnant woman. The seizures are unrelated to brain conditions and usually happen after the 20th week

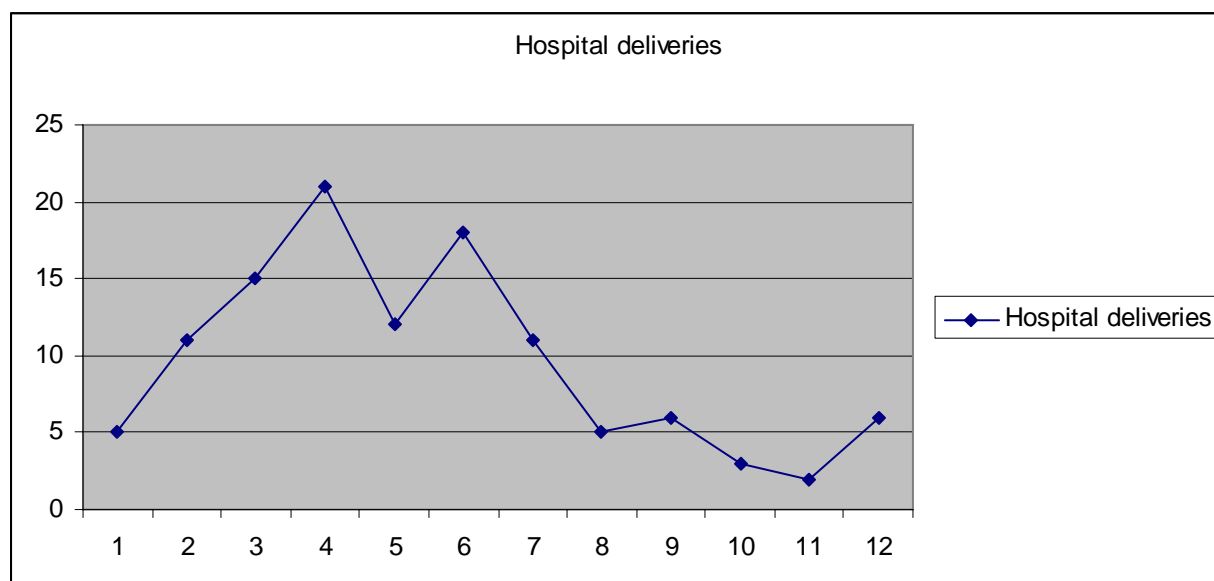
Table 12: Maternity ward outcome 2007

	Number	Causes
Admissions in maternity ward	292	Delivery, abortion, malaria, anemia, retained placenta, UTI
Deliveries	115	Normal and complicated deliveries
Maternal death in the hospital	5	Eclampsia, PPH, Sepsis, CPD, HIV/AIDS
Neonatal deaths (< 28 days)	5	Premature birth, perinatal stress etc
Referrals of maternity cases	27	5 months without theatre services

In 2007 a total of 290 women were admitted in the maternity ward with maternal health related problems. Of them 115 delivered in the hospital which means that not even 3% of the 5000 expected deliveries in the catchment area are taking place in Panguma hospital. Of the 5000 deliveries approximately 15% (750) is expected to result in a complicated delivery needing assistance by a qualified person.

Women prefer to deliver at home or in nearby clinics. Given the high maternal and infant mortality in Sierra Leone this is very sad. Women deserve a safe delivery and a healthy child at birth but they do not get it or seek it yet. A history of "7 pregnancies, 2 children alive" is so common in Panguma area.

Figure 5: Deliveries (115) in Panguma Hospital 2007



Why there is so much variation in monthly number of deliveries and a remarkable drop towards the end of the year is not fully understood.

We had 5 maternal deaths in 2007, each case a tragedy in its own and probably only the top of the iceberg as we have non information on maternal mortality in the community. Maternal mortality in Sierra Leone is among the highest in the world according to the latest UNICEF report on the State of Women and Children. The reported MMR is 1800/100.000 and UNICEF estimates that the life time risk of maternal death in Sierra Leone is one in 8! The contraceptive prevalence 2000-2006 is 5% and IMR ranks first worldwide. Panguma Hospital has to seek ways to address this together with the communities, the district and the peripheral health facilities including the private service providers. The trend in hospital deliveries for 2007 is not encouraging. It seems that in the course of the year less women come to deliver in our hospital instead of more.

The mode of delivery, complications around the delivery and the outcome of the deliveries in terms of healthy child, stillbirth, twins etc is not very well reported yet so reliable figures are not available this year.

In spite of the increased access of women to emergency obstetric care in our hospital we still had to refer 27 maternal problems to Kenema, due to (i) no theatre services yet in January – March 2007, absence of

doctor (almost three months) or matron (anesthesia), or due to a heavy workload in Panguma. If we could work at full capacity and with an increased utilization of the hospital by pregnant women, then we expect at least on average one caesarean per week. Eventually we hope that the *maternal mortality* and disability will gradually decrease.

To decrease the maternal mortality and disability more, we need to explain to the community, to the local traditional midwives (TBAs) and to the Mother and Child Health Aides (MCHA) that they have to refer maternal problems in an early stage. We still see pregnant women with a uterine scar (caesarean), who need closely supervised labour in the hospital, but who only arrive in the hospital after two days delay, usually ending in a tragedy for the child, sometimes as well for the mother. This is unacceptable if we consider all the energy which has been put in revival of the hospital and its outreach services. We have to increase our efforts to reduce the so-called 'three delays' causing the majority of pregnancy related mortality: Delay in (1) deciding to seek appropriate medical help for an obstetric emergency; (2) reaching an appropriate obstetric facility; (3) receiving adequate care when a facility is reached. In our area the first delay is probably the most serious causing so many unnecessary maternal deaths.

### 3.4. TB & leprosy ward

TB is a very big problem in our communities and responsible for many deaths among adults. Many of them do not present as TB of the lungs, but as a disease of a different organ. TB may settle anywhere in the body and we have to be aware of it in patients who fail to recover. It is a disease of poverty. We see many patients because it has been a neglected problem due to the war. Panguma hospital has put in place a well functioning TB program in close cooperation with Ministry of Health and WFP (feeding). A senior nurse is in charge of the daily management of the TB ward while the doctor supervises and supports him. The senior nurse gives out daily and monthly drugs, conducts health talks on the disease, gives out weekly dry ration food (WFP) and sometimes visits homes of patients. The drugs are donated by the National TB & Leprosy Control Program and provided free of charge to the patients. Most patients are cared for by a relative during their two months admission but some patients come without relatives or are really abandoned. The hospital takes care of them with the help of staff or villagers.

In 2008 we will have to do more active case finding and do follow up in the intimate surrounding of the TB patients, as there may be more patients with TB.

In 2007a total of 222 patients were admitted in our TB ward, the majority (53%) of them with sputum positive pulmonary TB as shown in the table below, 27% with sputum negative pulmonary TB and 18% with extra-pulmonary TB. Leprosy cases were very few, 3 in total in 2007.

Defaulters, who abandoned the hospital during the intensive first treatment phase, are not reported yet.

Table 13: New admissions in TB ward in 2007

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Pulmonary Positive Cases	16	9	9	6	13	13	8	2	8	9	16	9	<b>118</b>
Pulmonary Negative	3	4	10	4	7	9	6	4	3	2	2	7	<b>61</b>
Extra Pulmonary	7	0	0	4	4	3	3	2	3	11	2	1	<b>40</b>
Leprosy admission	0	0	1	0	1	0	0	0	0	1	0	0	<b>3</b>
<b>Total</b>	<b>26</b>	<b>13</b>	<b>20</b>	<b>14</b>	<b>25</b>	<b>25</b>	<b>17</b>	<b>8</b>	<b>14</b>	<b>23</b>	<b>20</b>	<b>17</b>	<b>222</b>

### 3.5. Laboratory

The laboratory did an excellent job with reviving the blood transfusion services in October 2006 according to the national protocols with testing of HIV, Hepatitis B and C, and syphilis. Now the hospital can also take part in the national PMTCT program and VCT program and enhance the promotion of early detection of HIV. We saved many lives of esp. young children with malaria who tend to develop severe anemia with

respiratory distress very rapidly. Also lives of quite a few women who lost a lot of blood after delivery have been saved as a result of this service. The laboratory technician went for upgrading in order to know the state of the art about the transfusion protocols and he did a remarkable job, esp. because he remained the only technician till May 2007. Blood transfusions are not limited to office hours and day and night laboratory staff made themselves available.

*Laboratory results*

Of the 381 potential **blood donors** this year 66 % were men and 34% were women. Their blood was as a standard procedure screened for HIV, Hepatitis B and C and Syphilis and the results were as follows:

*Table 14: Positive Test results of donor blood screening 2007*

	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>
<b>Total number tested</b>	<b>252</b>		<b>129</b>	
<b>HIV positive</b>	6	2.4%	1	0.77%
<b>Hepatitis B positive</b>	10	4%	0	0%
<b>Hepatitis C positive</b>	11	4.4%	4	3.1%
<b>Syphilis positive</b>	0	0%	0	0%

We are happy that the HIV prevalence among blood donors is still rather low compared to many other African rural areas. We will however need to think hard how the hospital and PHC program can help contain the epidemic in our area and keep the HIV prevalence low.

In 2007 a total of 349 units of blood were actually taken from blood donors (*# of donors screened and bled*) and transfused as detailed in the table below.

*Table 15: of units of blood transfused to inpatients*

	<b>Adult male</b>	<b>Adult female</b>	<b>Maternity</b>	<b>Male child</b>	<b>Female child</b>	<b>Total</b>
<b># admissions '07</b>	445	283	291	599		
<b># of units of blood</b>	47	41	39	105	117	<b>349</b>
<b>% of IP transfused*</b>	10.5%	14.7%	13.4%	37%		

\* The table shows that admitted children needed more blood transfusions than adult people. Though the figures refer to blood units and not to patients given blood, if we count one unit for one patient then the % of inpatients who received a blood transfusion is as presented in the table. In reality a few adult patients got more than one unit.

The laboratory conducted a lot of laboratory tests at the request of the senior nurses, CHO or doctor in charge. For inpatients mainly urine tests, stool tests, blood tests and pregnancy test. The laboratory also examines the sputum of suspected TB patients and lumbar fluid after lumbar puncture. For under-fives mainly blood test for malaria; stool test; hemoglobin HB test and urine. For outpatients mainly HB, blood slide for malaria parasites (MP), stool and urine test and sometimes sickle cell or skin snip as well as pregnancy test.

In 2007 particularly small children (37% of all admitted children) needed blood transfusions because severe malaria easily causes anaemia and even death if the children do not get blood. What seems a usual fever may suddenly deteriorate and cause quite sudden anaemia and the risk of death especially in children below the age of 2 years. It is hard to educate mothers on early treatment because of this. Even mothers who bring their feverish children in time to the hospital still risk that the child needs blood. We have to find ways to increase the access of the families to early and adequate treatment of malaria at community level. Analysis of the addresses of children who got blood shows that approximately 55% of the children come from Tongo and beyond. We must support primary health care in Tongo area, even if it

is a government health care delivery area. Follow up of the utilization of bed nets, prescription behavior in local drugstores and pharmacies as well as in private clinics, health education for mothers etc. More outreach and more collaboration with existing service providers....

### 3.6. Theatre

Early March 2007 we had a visit of Katharina Boehm. She led the PHC department in Panguma before the war (1987 – 1994), but is also experienced in theatre management. She organized the infrastructure of the theatre in a few weeks and she trained the team in the theatre procedures. The autoclave had already been repaired and the equipment had been ordered. In those weeks all essentials were put in place and we opened the major theatre by the end of March 2007. We are now able to perform emergency surgery such as caesarean sections, ectopic pregnancies and strangulated hernias. Each week we are doing one or more elective operations, esp. hernia in order to keep the ability of the theatre team at a proper level. When the doctor is not around, then it is possible to transfer an emergency patient to Kenema or Segbwema by hospital ambulance (one to two hours drive, depending on dry or rainy season). We offer this ambulance service free of charge. The demand for hernia operation is high. It has been a neglected problem for the last 12 years. Minor surgery if needed is done daily. A special word needs to be given to dental extractions. Dental care is a neglected area and we lost two adults because of a dental infection with cerebral thrombosis. Patients do know now that we can help them and they turn up in good numbers.

The table below presents an overview of the major surgery performed since the opening of the theatre. The theatre was operational for a total of seven months this year.

*Table 16: Major Surgery 2007 (7 months April - June +Sept – Dec )*

<b>Major surgical procedures</b>	<b>Number</b>
Laparotomy (obstruction)	1
Hernia	47
Strangulated hernia + bowel resection	0
Hernia irreducible	4
Hydrocele	11
Repair scrotum after Fournier	
Supra Pubic Catheter	1
Caesarean Section	5
Ruptured Uterus	
Ectopic	2
BTL (tube ligation)	
Ovary Cyst	
Major wound	3
Skin Grafting	
Cyst /Lipoma/Abscess	13
<b>Total</b>	<b>87</b>

Minor theatre procedures were many particularly dressings. Other common procedures were tooth extraction, incisions and drainage and D&C. The monitoring of the minor theatre procedures started in the course of 2007.

### **3.7. Lassa control**

Lassa fever is a dreadful illness that is difficult to contain at the moment. Before the war there was progress in building a Lassa ward in Panguma. The building is still there at the hospital compound but never completed. All patients being suspected of Lassa have to be referred to Kenema Government Hospital. The district has to supply the transport for these patients. Till March 2007 this was a problem but after discussions with all parties concerned it seems to be better now. There is a special Lassa ward in Kenema and a Lassa laboratory, supported by CDC Atlanta and Tulane University USA.

Panguma is in the Lassa belt so it would be appropriate to complete the building, not only for Lassa but also for other infectious diseases. This year the death rate for Lassa was high, about 70 percent. This is not acceptable. We continue our discussions with the Lassa team (leader dr Kahn) about possibility of giving first treatment in Panguma and about possible laboratory check in Panguma. New, more simple methods are being developed for diagnosing Lassa.

There is also the need to train staff to promote healthy environment and sanitation and the use of cats. On the hospital compound we have quite some cats and whenever they get young ones, we try to end them to the villages, especially those households who had a patient with Lassa. This should be an important subject for the outreach team. Lassa will be an important focus in our contact with the communities

We hope that with support from the Lassa Program staff in Kenema we can intensify our interventions both on preventive and curative level.

According to the database of the Lassa Ward in Kenema, they admitted 17 patients referred by our hospital. 2 patients were aged < 5 years, 4 patients 5-15 years and the remaining 11 were above 15 years of age. 11 were male and 6 female. Of the 17 patients 7 died and 10 were discharged.

In 2008 we hope to establish a more detailed database on the Lassa caseload in terms of patients referred, blood sent for testing, patients not referred but suspected etc.

### **3.8. HIV/AIDS / STI/ Sexual health**

HIV/AIDS will be an important focus in our contact with the communities. It is the whole spectrum of sexual health, not only venereal diseases including HIV, but also the problem of teenage pregnancies in schoolgirls. We already got the invitation of a few schools to organize health education about these issues and we are eager to support the teachers with the education about these sensitive issues.

Sierra Leone has the highest under-5 mortality in the world: 270/1000 in 2006 and the contraceptive prevalence rate in Sierra Leone 2000-2006 is very low (UNICEF report 2008): 5%. We see the impact of this among the women and children in our hospital. Women who have an obstetric history of delivering each two years, rarely assisted in a health facility and losing many of their children. It seems almost exceptional to meet a mother whose children are all alive or a mother who uses family planning.

Teenage pregnancies and early marriages are common around Panguma. Awareness about HIV/AIDS is still quite poor. AIDS is not yet a problem in the hospital as it is in Eastern and central sub-Saharan countries. Very few AIDS cases have been admitted this year. The HIV prevalence among potential blood donors was 2% this year.

#### 4. Outreach program

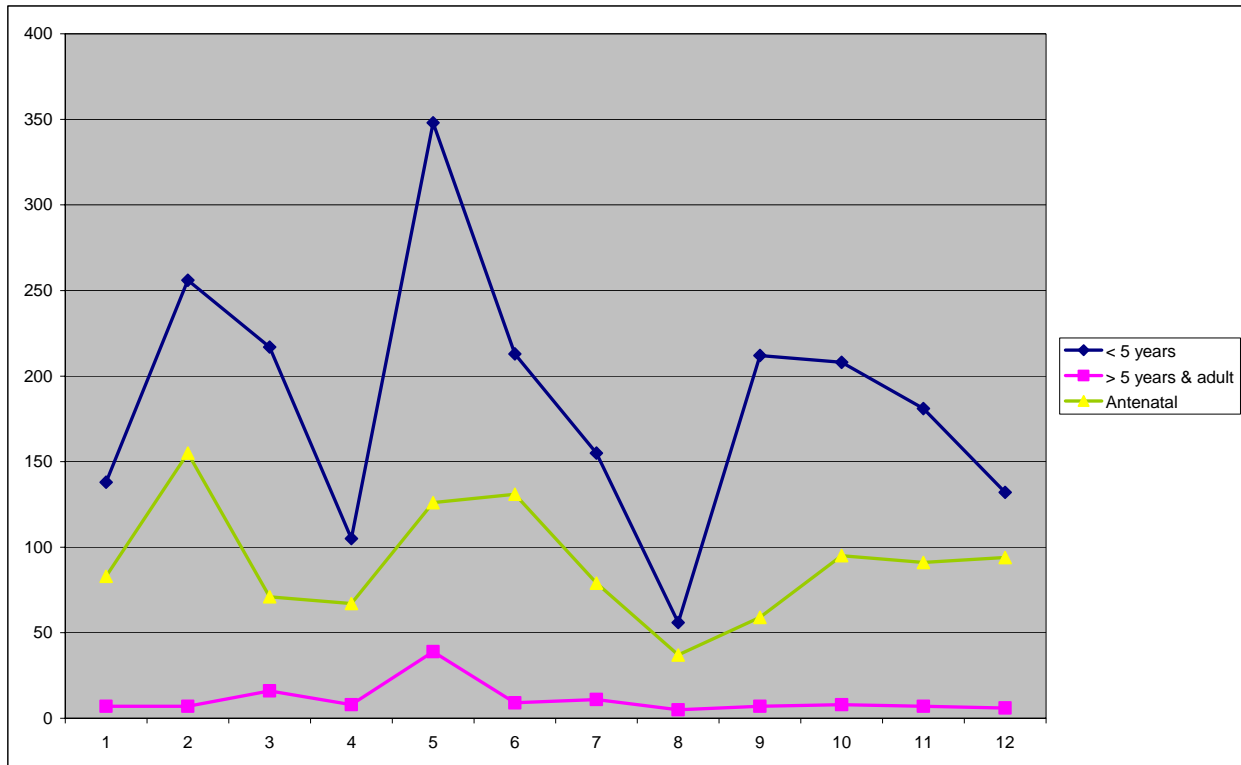
Panguma hospital values outreach very much as it is so essential for disease prevention and cheaper than cure. We were fortunate to employ a very competent senior nurse in March as outreach coordinator. The PHC program got a real boost but in July she decided to leave, a decision beyond our influence. This certainly caused a setback in our PHC activities. We hope to get back on track through recruiting a very competent Community Health Officer (CHO) late in 2007.

Table 17: Mobile outreach attendances 2007 (ANC, < 5 and > 5)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Antenatal	83	155	71	67	126	131	79	37	59	95	91	94	<b>1088</b>
< 5 years	138	256	217	105	348	213	155	56	212	208	181	132	<b>2221</b>
> 5 years & adult	7	7	16	8	39	9	11	5	7	8	7	6	<b>130</b>
<b>Total</b>	<b>228</b>	<b>418</b>	<b>304</b>	<b>180</b>	<b>513</b>	<b>353</b>	<b>245</b>	<b>98</b>	<b>278</b>	<b>311</b>	<b>279</b>	<b>232</b>	<b>3439</b>

NB: figures in May/June so high because of additional outreach villages covered

Figure 6 : Mobile outreach clinic attendances 2007 (on two weekly basis in 5 villages)



Interpretation of the figure:

- Number of attending children and mothers varies enormously per month (and per village, see below) because: (i) in May and June the outreach team went to several additional villages for immunization and antenatal care, resulting in higher numbers. This geographical expansion was stopped again when the PHC coordinating nurse Juliana left Panguma hospital in June 2007. The drop in August may be related to the peak of the rainy season and the peak of local poverty.

- Attendance figures per outreach village (not presented in the table above but in one of the appendices) also show huge differences per month ranging for instance from 16 under-fives in July in Bomie versus 125 under-fives in February. Again evidence of seasonality of attendance.
- All 5 outreach villages were visited twice per month during 2007. However, in some villages the number of pregnant mothers and under-fives who attended was rather small almost each visit. Bomie and Kamboma are busy places where a monthly visit is clearly justified. However, the attendances in the other three villages are quite moderate and two outreach visits per month may not be justified in terms of resources spent. It will be necessary to assess the catchment population in each of these villages and to estimate the size of the target group (e.g. 4% of total population = expected number of children < 1 year and expected number of pregnant women.) The outreach coordinator will need to review the outreach schedules and discuss with the hospital management how to address the low attendances. In terms of efficiency and cost effectiveness one visit per month would be more appropriate. Other scenarios need to be considered as well. Sending an entire team of 4 qualified staff to attend to less than 10 under-fives and less than 5 pregnant women is not cost-effective. NB: each place is visited twice per month! In the case of Foyah for instance on average 14 under-fives attend per month so 7 per outreach session. Panguma Hospital needs to review the criteria for selecting communities for outreach activities

Table 18: Comparison of clinic attendance in five outreach villages 2007

	Bomie	Kamboma	Njagor	Foyah	Baoma
<b># children &lt; 5 years</b>	696	633	246	166	230
<b>Average per month (2 visits)</b>	58	53	20	14	19
<b># adults and children &gt; 5 years</b>	37	22	29	6	6
<b>Average per month (2 visits)</b>	3	2	2.5	0.5	0.5
<b># pregnant women ANC</b>	425	348	91	92	67
<b>Average per month (2 visits)</b>	35	28	8	8	5.5

Monthly statistics and reports by the PHC coordinator indicate that a large % of children attending the outreach or the static clinic are seen by a nurse/CHO for treatment of illness. For instance in the period of August - November 2007 (4 months period) 944 illnesses were diagnosed and treated among the 657 under-fives who attended, while 55 diagnoses were made and treated among 232 pregnant women. Interpretation of these data may vary:

- <5 children attend in the first place because they are ill and not primarily for immunization
- Mothers claim that their children are ill or have been feverish in the past 2 weeks whenever they bring their children for immunization and the medical staff prescribes drugs irrespective of the presence or absence of real signs and symptoms of illness.
- Most children are diagnosed with more than one illness and therefore over-prescription of drugs is common. MCH clinic staff are inclined to 'remunerate' a mother attending the clinic with some drugs while the first objective of the MCH clinic is prevention and not cure.

In 2008 follow up will be given to the issue of preventive versus curative care in MCH clinics:

- monitor and report the % of children who attend for
  - immunization only
  - immunization + illness
  - weighing only
  - weighing + illness
- change the registers accordingly so that one will know whether a child came for preventive and/or curative care and conduct health education if mothers always claim that the child is ill...

If the regular dose of malaria and/or ARI treatment at clinics has a preventive and early treatment role than one would expect that children in the outreach villages are less at risk of severe malaria + anemia

and pneumonia than those who do not get these doses. Are children from outreach villages represented less among the admissions and death in the hospital? It is difficult to really know.

A review of data regarding blood transfusions given to under-fives in the last six months of 2007 shows that approximately 55% of the children come from Tongo area including different villages beyond Tongo that are not covered by our outreach team, 22% come from Panguma and the remaining 23 % from other villages all over the catchment area. But still we can not know whether they were attending our outreach sites.

When comparing mobile ANC attendance (total 5 villages: 1088) with static ANC attendance (total 2089) it is striking that the static clinic in Panguma reaches more pregnant women than the five outreach villages together. This needs further analysis. Is the catchment population larger or do pregnant women around Panguma hospital attend more frequently during a pregnancy?

*Plan for 2008:*

- *Hospital staff will stress the importance of bringing MCH card to the hospital and outreach clinics, both for outpatients and inpatients*
- *Outreach and MCH static clinic staff will monitor during clinic whether a child attends for preventive or curative services: illness and/or immunization and/or weighing*
- *We will insert the growth status of the Road to Health card (green-yellow-red zone) in the clinic registers (static and mobile). This will help us know which children are at risk and need follow up and what % of attending children is under-weight*
- *To collect population figures for each of the outreach communities and for Panguma.*

When comparing outreach figures of 2007 with data of 1991, our outreach program has still a lot to improve unless the vaccination coverage is good for communities not covered by our outreach. In 1991 Panguma hospital staff covered 38 communities in the area with a really comprehensive PHC program. But meanwhile government health units have been built in many places and many of these units immunize children and pregnant women with the help of a cool box that is filled in the nearby bigger health unit. We do not want to go there where the government has already a unit and we want to avoid duplication and competition.

*Table 19: Outreach attendance – comparison 2007 / 1991*

	<b>1991</b>	<b>2007</b>	<b>% of 1991</b>
<b># under-fives</b>	22.946	6.952	30% of 1991
<b>ANC</b>	16.989	3.177	20% of 1991

According to the coordinator of the cold chain and immunization program in our hospital (Sylvester) the total number of immunizations given in 2007 (static + outreach) are as follows:

*Table 20: Total of Immunizations given in static + outreach clinics*

<b>Type of vaccine</b>	<b>Quantity of immunizations given</b>
BCG	1.102
Pentavalent	984
Measles	654
Yellow Fever	578
Tetanus Toxoid	1.598

These data show a alarming gap between the total number of BCG given and the total of measles vaccine given (1.102 versus 654) while the number of < 1 year expected to be immunized for BCG or measles is the same. The data suggest that many children drop out/default before they are 1 year old or get their vaccination elsewhere but then why would they get their BCG in Panguma or in one of our outreach stations and other vaccinations elsewhere? They are not born in Panguma hospital. If the data are correct then a closer follow up of the vaccination status of children is needed

Plan for 2008

In addition to the current five outreach villages we will strengthen our contacts with village health committees and schools about some key issues:

- Importance of under five growth cards, with possible nutritional intervention in an early stage in case of Malnutrition
- malaria control at community level through impregnated bed nets and early treatment of children with fever
- TB case finding and follow up of drop outs
- sexual health including STI/HIV and teenage pregnancies
- early referral of problem pregnancies and deliveries
- community based Lassa control: the hazard of rats, prevention of contact with excreta of rats and promotion of cats
- promotion of early dental care in the hospital
- information, education and communication (IEC) about
  - dogs and risk of dog bites (stray dogs). We lost a young boy because of rabies
  - epilepsy and possibility of treatment in the hospital
- Continuation of campaign river blindness, supply of Mectizan

## 5. Challenges and future plans

### Challenges

#### Future

We have all worked very hard to put things in place for the good of our patients. It is not easy but we believe if we put our hands together in 2008 we can work better and make Panguma Hospital one of the better hospitals. This challenge must be fulfilled this year as we strive towards health for all.

The hospital will support the district in the implementation of the national health programs. The hospital is not a private entity on its own. We feel responsibility for the health of the people in our catchment area, roughly 100,000 people in the chiefdoms Lower Bambara, Dodo and Malegohun (all part of the Kenema District with more than 500,000 people). We will not only focus on the hospital work as such, but especially on our relation with the communities through our outreach team. In a situation of poverty it is difficult for many people to come to the hospital in an early stage, so a lot has to be gained by prevention of problems. We know that we are not the single player in the field of health services in our area. The situation is different from the situation before the war. The government has developed services in many areas and we will work in close cooperation with these services. We will have to prevent any type of negative competition. We will have to relate with village governments and their health committees, and with the schools in our areas.

## 6. Acknowledgements

Many deserve a word of thanks. Without the enormous dedication and enthusiasm of the staff Panguma Hospital would not have developed into such a widely appreciated place of treatment and care.

Thanks to the Diocese and the Diocesan Health Coordination Office who steered the hospital from a distance but with great commitment.

Thanks to the local communities and their leaders, the chiefs and imams, for their collaboration and interest in the quality of care.

**Appendix 1: Staffing Panguma Hospital per 31.12.2007 and projected for coming years**

	<b>actual</b>	<b>planned</b>	<b>planned</b>	<b>planned</b>
	<b>31.12.2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Director	Interim	1	1	1
Medical Doctor	1	2	3	3
Matron	1	1	1	1
Assistant Matron		1	1	1
Night Superintendent		1	1	1
CHO	2	2	2	2
SECHN	12	18	20	20
Nurse Aides	16	20	22	22
Laboratory Technologist	1	2	2	2
Laboratory Technician	1	1	1	1
Registrar	2	2	2	2
Security guards	4	6	7	8
Cleaners	4	6	7	7
Laundry	2	3	3	3
Maintenance	1	1	1	1
Driver	1	2	2	2
Tailor		1	1	1
Secretary	1	1	1	1
Administrator	1	1	1	1
Accountant		1	1	1
Statistic/Logistician		1	1	1
<b>Total</b>	<b>50</b>	<b>74</b>	<b>81</b>	<b>82</b>

**APPENDIX 2: Panguma Hospital - Local Income & Expenditure Summary 2007**

<b>INCOME (Le)</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>April</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug</b>	<b>Sept</b>	<b>Nov</b>	<b>Dec</b>	<b>TOTALS</b>
OPD Reg. > 5yrs. & Adults	<b>2.100.000</b>	<b>8.250.000</b>	<b>12.245.000</b>	575.750	1.443.500	1.349.500	980.000	518.000	489.000	1.013.000	737.500	30.663.250
OPD Drugs> 5yrs. & Adults				1.151.500	5.380.500	4.532.000	2.966.200	1.241.000	1.130.500	3.742.700	2.845.500	26.545.400
Inpatients fees 5yrs. & Adults				3.549.000	6.349.500	5.619.700	3.336.200	2.633.300	2.605.000	6.029.700	4.640.750	40.326.350
Laboratory fees 5yrs. & Adults				1.032.500	757.500	833.500	644.000	380.500	343.000	717.000	496.000	5.845.000
Outreach Reg. > 5yrs. & Adults				227.000	342.000	227.500	167.000	70.000	176.000	189.000	164.500	1.762.500
Outreach Drugs >5yrs & Adults				3.396.500	280.500	323.500	145.500	58.500	161.500	291.000	179.500	5.028.000
<b>TOTALS</b>	<b>2.100.000</b>	<b>8.250.000</b>	<b>12.245.000</b>	<b>9.932.250</b>	<b>14.553.500</b>	<b>12.885.700</b>	<b>8.238.900</b>	<b>4.901.300</b>	<b>4.905.000</b>	<b>11.982.400</b>	<b>9.063.750</b>	<b>110.170.500</b>

<b>EXPENDITURE (Le)</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug</b>	<b>Sept</b>	<b>Nov</b>	<b>Dec</b>	<b>TOTALS</b>
Drugs & medical equipment	0	0	0	0	205.000	320.000		374.500	0	0	0	899.500
Engine oil	0	0	0	0	0	0	0	0	0	0	0	0
Fuel :diesel	0	0	0	0	0	0	0	0	0	0	0	0
Petrol	0	0	0	0	0	0	0	0	0	0	0	0
Kerosene	0	0	0	0	0	0	0	0	0	0	0	0
Health Committee fees	0	0	0	0	0	0	0	0	0	0	0	0
Hospital Maintenance	0	0	0	0	0	0	65.000	0	0	0	0	65.000
Transport	0	0	0	0	0	65.000	20.000	0	0	0	0	85.000
Motorbike maintenance	0	0	0	0	0	0	0	0	0	0	0	0
Advance Salaries	0	0	0	0	0	0	0	0	0	0	0	0
Feeding/intertainment	0	0	0	0	50.000	0	0	0	0	0	0	50.000
Miscellaneous	0	0	0	0	0	50.000	30.000	0	0	0	0	80.000
<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>255.000</b>	<b>435.000</b>	<b>115.000</b>	<b>374.500</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1.179.500</b>

APPENDIX 3 Panguma Hospital - basic statistics 2007 revised in Aug 2008 on location, corresponding to electronic database

		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	Total	%
<b>Outreach clinics 2007</b>	< 5 years	138	256	217	105	348	213	155	56	212	208	181	132	<b>2221</b>	64.6%
	> 5 years & adult	7	7	16	8	39	9	11	5	7	8	7	6	<b>130</b>	3.8%
	Antenatal	83	155	71	67	126	131	79	37	59	95	91	94	<b>1088</b>	31.6%
	<b>Total</b>	<b>228</b>	<b>418</b>	<b>304</b>	<b>180</b>	<b>513</b>	<b>353</b>	<b>245</b>	<b>98</b>	<b>278</b>	<b>311</b>	<b>279</b>	<b>232</b>	<b>3439</b>	

<b>Hospital OPD 2007</b>	< 5 years	455	478	484	444	456	466	326	264	348	371	316	158	<b>4566</b>	30.6%
	> 5 years & adult	634	692	617	908	1162	1031	782	362	303	699	739	503	<b>8432</b>	56.6%
	Antenatal	157	259	247	185	188	146	122	110	116	122	130	129	<b>1911</b>	12.8%
	<b>Total</b>	<b>1246</b>	<b>1429</b>	<b>1348</b>	<b>1537</b>	<b>1806</b>	<b>1643</b>	<b>1230</b>	<b>736</b>	<b>767</b>	<b>1192</b>	<b>1185</b>	<b>790</b>	<b>14909</b>	

<b>Static &lt; 5 OPD 2007</b>	< 5 years overall attendance	455	478	484	444	456	631	326	264	348	371	316	158	<b>4731</b>	
	< 5 years treated for illness	150	230	298	257	412	390	244	171	194	299	289	149	<b>3083</b>	65%

<b>Admissions 2007</b>	< 5 children	15	25	48	69	91	83	48	40	29	55	60	36	599	32.6%
	> 5 Female	30	26	29	34	18	35	19	16	15	24	25	12	283	15.4%
	> 5 Male	28	19	44	58	47	44	39	20	24	49	40	33	445	24.2%
	Maternity	21	19	36	37	34	40	20	11	12	24	18	18	290	15.7%
	TB & Leprosy	26	13	20	14	25	25	17	8	14	23	20	17	222	12.1%
	<b>Total</b>	<b>120</b>	<b>102</b>	<b>177</b>	<b>212</b>	<b>215</b>	<b>227</b>	<b>143</b>	<b>95</b>	<b>94</b>	<b>175</b>	<b>163</b>	<b>116</b>	<b>1839</b>	

<b>Deliveries 2007</b>	<b>Number</b>	<b>5</b>	<b>11</b>	<b>15</b>	<b>21</b>	<b>12</b>	<b>18</b>	<b>11</b>	<b>5</b>	<b>6</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>115</b>	
<b>Referrals (delivery related)</b>														<b>27</b>	

<b>TB and Leprosy</b>	Pulmonary Positive Cases	16	9	9	6	13	13	8	2	8	9	16	9	<b>118</b>	53%
details	Pulmonary Negative	3	4	10	4	7	9	6	4	3	2	2	7	<b>61</b>	28%
	External Pulmonary	7	0	0	4	4	3	3	2	3	11	2	1	<b>40</b>	18%
	Leprosy Admission	0	0	1	0	1	0	0	0	0	1	0	0	<b>3</b>	1%
	<b>Total</b>	<b>26</b>	<b>13</b>	<b>20</b>	<b>14</b>	<b>25</b>	<b>25</b>	<b>17</b>	<b>8</b>	<b>14</b>	<b>23</b>	<b>20</b>	<b>17</b>	<b>222</b>	

<b>Inpatient deaths 2007</b>	< 5 years	3	4	10	19	20	22	13	12	2	6	7	5	<b>123</b>	58%
<i>monitored by MO in charge</i>	6 -15 years		1		1	1						2		<b>5</b>	2.4%
	men > 15 years	3	3	4	3	7	3	3	3	2	4	6	5	<b>46</b>	21.6%
	women > 15 years	1	2	2	3	2	5	2	4	5	3	1	2	<b>32</b>	15%
	TB ward	0	0	0	0	0	1	0	0	0	0	0	0	<b>1</b>	0.5%
	Maternity	1	0	0	0	1	2	0	0	1	0	0	0	<b>5</b>	2%
	<b>Total</b>	<b>8</b>	<b>10</b>	<b>16</b>	<b>26</b>	<b>31</b>	<b>33</b>	<b>18</b>	<b>19</b>	<b>10</b>	<b>13</b>	<b>16</b>	<b>12</b>	<b>212</b>	

<b>Inpatient death rates 2007</b>	admissions < 5 years	15	25	48	69	89	85	48	40	29	55	60	36	<b>599</b>
	hospital death < 5 years	3	4	10	19	20	22	13	12	2	6	7	4	<b>122</b>
	<i>deathrate admitted children</i>	20%	16%	20%	28%	22%	26%	27%	30%	7%	10%	11%	11%	<b>20%</b>
	admissions > 5 years	58	45	73	93	65	78	58	35	39	71	66	47	<b>728</b>
	hospital death > 5 years	4	6	6	7	10	8	5	7	7	8	9	7	<b>84</b>
	<i>deathrate admitted &gt; 5</i>	6,9	13,3	8,2	7,5	15,4	10,3	8,6	20	18	11,3	13,6	14,9	<b>11.6%</b>
	6 -15 years		1		1	1						2		<b>5</b>
	men > 15 years	3	3	4	3	7	3	3	3	2	5	6	5	<b>47</b>
	women > 15 years	1	2	2	3	2	5	2	4	5	3	1	2	<b>32</b>

<b>Referral 2007</b>	< 5 years	2	0	0	0	0	0	0	0	2	0	0	1	<b>5</b>
	> 5 years & adult	5	1	3	1	1	1	0	7	3	3	6	8	<b>39</b>
	TB	0	0	0	0	0	0	0	0	0	0	0	-	<b>0</b>
	Maternity	0	0	0	0	0	0	3	2	5	1	4	3	<b>18</b>
	Lassa Fever													<b>17</b>
	Against Medical Advice	0	0	0	0	0	0	1	0	0	4	0	-	<b>5</b>
	<b>Total</b>	<b>7</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>9</b>	<b>10</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>84</b>

<b>Blood Transfusion 2007</b>	Children	3	7	9	24	19	28	21	26	19	23	22	20	<b>221</b>	64%
	Adults	6	2	6	6	19	10	2	14	5	3	8	7	<b>88</b>	25%
	Maternity	5	0	4	4	5	5	2	1	2	5	3	3	<b>39</b>	11%
	<b>Total</b>	<b>14</b>	<b>9</b>	<b>19</b>	<b>34</b>	<b>43</b>	<b>43</b>	<b>25</b>	<b>41</b>	<b>26</b>	<b>31</b>	<b>33</b>	<b>30</b>	<b>348</b>	

**Appendix 4: Inpatient morbidity (children, male, female and maternity)**

<b>Children IP morbidity</b>	<b>Jan – Dec 2007</b>	<b>% of Total</b>
	<i>12 months</i>	<i>660 inpatients</i>
malaria	265	40,00%
malaria + anemia	141	15,00%
anemia	58	9,00%
<i>Total malaria</i>		<i>64%</i>
ARI	61	
pneumonia	8	
<i>Total resp. tract infections</i>		<i>10,50%</i>
Worms	3	
diarrhea&vomiting/GE	10	2,00%
EH / amoeba dysentry	3	
Dehydration	8	1,20%
Malnutrition	24	4,00%
Ascitis	0	
TB	8	1,20%
Meningitis	14	2,00%
cardiac failure	1	
Hypoglycaemia	9	1,40%
Lassa	6	1,00%
herbal intoxication	4	
Boil	2	
Typhoid	5	
Candidiasis	3	
Wound / trauma /fracture	4	
RIH (hernia)	3	
Schistosomiasis	2	
Abcess	3	
PUO (fever unknown origin)	3	
Burns	1	
nephritis/nephrotic syndrome	1	
Thrush	1	
Rabies	1	
Otitis	1	
Septicaemia	2	
sickle cell	1	
skin infection	2	
kidney failure	1	
black vomit		
Poison		
Hydrocele		
Epilepsy		
castic soda		
<b>Total</b>	<b>659</b>	

<b>Diagnoses Inpatients Male Ward 2007</b>		
	<b>2007</b>	
	<i>166 inpatients</i>	<i>%</i>
<b>Diagnosis</b>	<b>August - December</b>	
Malaria +/- anaemia	24	14,00%
Anaemia	4	2,00%
ARI including pneumonia	9	5,00%
Peptic Ulcer Disease PUD	27	16,00%
TB	10	6,00%
Hernia	20	12,00%
CCF	10	6%%
Stroke	1	
Hypertension	8	5,00%
Typhoid	8	5,00%
Trauma	5	3,00%
Hepatitis	1	
Tetanus	1	
Cut wound	2	1,00%
Fracture	1	
Hydrocele	4	2,00%
GE / DD	2	1,00%
Syphilis	1	
Intestinal obstruction	2	1,00%
Nephrotic syndrome	2	1,00%
AIDS	3	2,00%
Hemorrhoid	1	
Diabetes	1	
Acute abdomen	1	
Laceration	3	2,00%
Worms	2	1,00%
Schistosomiasis Mansoni	2	1,00%
Meningitis	2	1,00%
Lassa	1	
Prostatitis	2	1,00%
UTI	1	
Asthma	2	1,00%
Ascitis	3	2,00%
Dental problem	1	
Arthritis	1	
Liver failure	1	
<b>Total</b>	<b>169</b>	

<b>Diagnoses Inpatients Female Ward 2007</b>		
<b>Diagnosis</b>	<b>August – December</b>	<b>%</b>
	<i>92 admissions</i>	
Malaria +/- anaemia	11	13
Anaemia	5	6
ARI including pneumonia	1	
Peptic Ulcer Disease PUD	11	13
TB	5	6
Hernia	2	
CCF	6	7
Stroke	1	
Hypertension	5	6
Typhoid	1	
Hepatitis	1	
Cut wound	1	
GE / DD	1	
Intestinal obstruction	1	
AIDS	3	4
Worms	1	
Schistosomiasis Mansoni	5	6
Meningitis		
Lassa	2	
Ascitis	2	
Assault	2	
PUO	2	
D&C	2	
Cancer	3	4
Diabetes	1	
Peritonitis	2	
Abcess	1	
Gastric perforation	1	
Burns	1	
PV bleeding	1	
Myoma	1	
Hepatomegaly	1	
STI	1	
<i>Missing diagnosis</i>	<i>8</i>	

<b>Maternity Ward Inpatient diagnoses 2007</b>		
1	Delivery / labour	
2	Malaria	
3	Abortion	
4	STI	
5	Anaemia	
6	Retained placenta	
7	Urinary Tract Infection	

### Appendix 5: Causes of death Inpatients 2007

Adults and children above 5 years		rank	% of total deaths >5
TB complications e.g.pneumonia/sepsis	18	1	20%
Cardiac Failure	10	2	11%
AIDS	6	3	6.7%
<i>Maternal death (3 sepsis, 1 eclampsia, 1 PPH at home)</i>	5	4	5.6%
Stroke	4		4.4%
Lassa Fever	4		4.4%
Cirrhosis / liver failure	4		4.4%
Kidney failure	4		4.4%
Gastric bleeding	3	9	3.3%
Pneumonia	2		
Sinus trombosis (dental)	2		
Aneurysm Abdominal aorta ?	2		
Poison	2		
Abdominal condition (ileus)?	2		
Anaemia (aplastic)	2		
CA-pancreas?	1		
Diabetes complications	1		
Hodgkin (like..)	1		
Haepatoma (CA)	1		
Shock e.c.i.	1		
Skull trauma	1		
Brain tumor	1		
Neck trauma	1		
Glomerulo-nephritis	1		
Rabies	1		
GE	1		
Meningitis	1		
Tetanus	1		
Unknown	6		
<b>Total</b>	<b>89</b>		
<b>Children &lt; 5 years</b>			
Malaria complications	62	1	50%
Local herbs/ black vomit / black fluid	11	2	9%
Meningitis	9	3	7.5%
Gastro-enteritis GE	9	4	7.5%
Malnutrition	8	5	7%
Pneumonia	6	6	5%
TB	5	7	4%
Problems newborn/ prematurity	4		
Lassa Fever	2		
Sepsis	2		
Gastro int. bleeding e.c.i	1		
AIDS	1		
Skull fracture	1		
Jaundice	1		
Unknown	1		
<b>Total</b>	<b>123</b>		
<b>Grand total death children + adults</b>	<b>212</b>		

**Appendix 6**  
**Immunizations 2007, static +outreach**

		No. of underfives	BCG	1st DPT	2nd DPT	3rd DPT	total	yellow fever	measles	TT pregnant	TT non pregnant
Jan	M	117	56	5	2	4	184				
	F	90	42	2	4	3	141				
Feb	M	131	44	9	10	15	209				
	F	152	68	8	6	13	247				
March	M	137	55	11	6	10	219				
	F	106	40	9	4	10	169				
April	M	122	0	20	11	21	174				
	F	86	0	11	10	12	119				
May	M	145	40	12	10	21	228				
	F	194	56	20	12	23	305				
June	M	131	45	15	8	6	205				
	F	121	49	10	6	10	196				
July	M	213	45	20	14	30	322				
	F	243	50	20	10	43	366				
Aug	M	262	60	26	23	30	401				
	F	270	74	20	21	37	422				
Sept	M	132	52	9	6	12	211				
	F	130	42	11	4	18	205				
Oct	M	154	50	15	12	9	240				
	F	139	47	10	17	7	220				
fNov	M	134	40	10	11	15	210				
	F	185	51	26	13	16	291				
Dec	M	163	46	20	16	11	256				
	F	177	50	22	14	17	280				
<b>Total</b>		<b>3734</b>	<b>1102</b>	<b>341</b>	<b>250</b>	<b>393</b>	<b>5820</b>	<b>578</b>	<b>659</b>	<b>1438</b>	<b>160</b>

Monitoring according to **sexe** as required by KDHCO and not by the MoH is not really relevant.  
 2859 male versus 2961 females is not a significant difference. 49% versus 51%

**Appendix 7: Outreach results 2007 for all target groups per village**

	Bomie			Kamboma			Njagor			Foyah			Baoma		
	UFC	> 5	ANC	UFC	> 5	ANC	UFC	> 5	ANC	UFC	> 5	ANC	UFC	> 5	ANC
<b>Jan</b>	51	4	37	46	1	24	13	2	16	20	0	6	0	0	0
<b>Feb</b>	125	5	90	66	1	44	54	1	6	11	0	15	0	0	0
<b>Mar</b>	82	12	24	94	2	26	16	0	6	25	2	15	0	0	0
<b>Apr</b>	45	0	24	35	0	26	27	8	8	8	0	9	0	0	0
<b>May</b>	38	1	15	56	4	41	7	2	3	0	0	0	51	3	10
<b>Jun</b>	65	2	36	61	3	58	12	1	12	14	1	12	25	1	5
<b>Jul</b>	16	4	35	65	3	24	5	3	5	13	1	2	36	0	13
<b>Aug</b>	19	2	20	20	2	13	7	1	4	0	0	0	10	0	0
<b>Sep</b>	31	0	7	45	2	18	29	3	4	42	0	12	65	2	18
<b>Oct</b>	66	2	40	75	0	25	48	5	16	8	1	9	11	0	5
<b>Nov</b>	114	2	53	28	2	17	18	3	10	9	0	6	12	0	5
<b>Dec</b>	44	3	44	42	2	32	10	0	1	16	1	6	20	0	11
<b>Total</b>	<b>696</b>	<b>37</b>	<b>425</b>	<b>633</b>	<b>22</b>	<b>348</b>	<b>246</b>	<b>29</b>	<b>91</b>	<b>166</b>	<b>6</b>	<b>92</b>	<b>230</b>	<b>6</b>	<b>67</b>