



Federal Ministry  
for Economic Cooperation  
and Development



# Partnerships for better patient care

How ESTHER Germany supports the twinning of  
African and German hospitals

A publication in the German Health Practice Collection

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More information can be obtained from the Managing Editor at [ghpc@giz.de](mailto:ghpc@giz.de).

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## Acronyms and abbreviations

AABY	Aam Aadmi Bima Yojana
AIDS	Acquired immunodeficiency syndrome
BMZ	Federal Ministry for Economic Cooperation and Development, Germany
ESTHER	Ensemble pour une Solidarité Thérapeutique Hospitalière En Réseau (Network for Therapeutic Solidarity in Hospitals against AIDS)
GDC	German Development Cooperation
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
HIV	Human immunodeficiency virus
PRC	Polymerase chain reaction
TB	Tuberculosis

## Executive summary

This publication describes how ESTHER Germany supports partnerships between hospitals in Africa and Germany, allowing the partners to learn from one another and to join forces in addressing HIV and other health challenges.

### Situation

ESTHER Germany is a member of the *Ensemble pour une Solidarité Thérapeutique Hospitalière En Réseau*, a European initiative to improve health outcomes in low- and middle-income countries through a series of twinning arrangements between European and African, Asian and Latin-American hospitals and academic and research institutions. The initial aim of most of these partnerships was to enhance North-South collaboration on hospital diagnosis and treatment of HIV and AIDS, but it soon became apparent that this approach could also be very effective in addressing other health challenges, such as the management of infectious diseases and fast and effective responses to epidemic outbreaks, a topic high on the international political agenda following the Ebola outbreak.

### Approach

ESTHER Germany twins hospitals in Germany and Africa and, more recently, has begun to support a South-South partnership between hospitals in Tanzania and Cameroon. These peer-to-peer partnerships are based on mutual professional respect and understanding, and are built up over a period of time, with both sides benefitting from the two-way learning experience. Interventions are carefully planned after a joint assessment of the African partners' specific needs and the corresponding expertise and experience which professionals working in similar fields in the German partner hospitals can provide. The partners agree upon plans of action to be implemented over a specific period, mostly by means of knowledge transfer through reciprocal exchange visits, training on the job in the German and African hospitals and regular joint monitoring of progress.

This case study describes two partnerships supported by ESTHER Germany. The first is between Tanga Regional Referral Hospital in Tanzania and Charité University Hospital in Berlin and focuses on a quality improvement approach for strengthening healthcare outcomes. A five-year relationship has given the hospitals time to work through the stages of quality improvement, from initial quality assessment to establishing quality management.

The second partnership is between Limbe Regional Hospital in Cameroon and Rostock University Hospital and aims to improve diagnosis and care of HIV patients through strengthening laboratory, medical and nursing capacities.

The case study also details the establishment of an innovative South-South partnership between Tanga Regional Hospital in Tanzania and Bamenda Hospital in Cameroon, extending the quality management approach to Cameroon.

### Results

Both ESTHER Germany supported hospital partnerships have generated important results. For the Tanga-Berlin partnership they include the following:

- The quality of care at Tanga Hospital has markedly improved. Regular hospital self-assessments conducted over a five-year period from 2009 to 2014 show that clinical practices have continuously improved, and that the partnership has helped to improve the quality of health care.
- A culture of quality has been established at Tanga Hospital, with hospital and departmental quality teams in operation, regular assessments conducted, action plans drawn up to address problems identified and a full-time quality focal point appointed to coordinate efforts. Health workers in Tanga are now keen to improve the quality of care and their working conditions with the resources they have at their disposal instead of waiting for assistance from outside.
- The quality improvements have led to better health outcomes (including a reduction in the percentage of maternal deaths) and an increased number of patients.

Similarly, the Limbe-Rostock partnership produced the following outcomes:

- The capacities of laboratory, medical and nursing staff have been significantly enhanced through training of key staff in Rostock and on the job in Limbe with regular visits from German partners.
- The health outcomes for HIV patients show marked improvements, with more patients seen, fewer lost to follow-up treatment and fewer known deaths.

Some positive results are shared between both partnerships:

- In the course of their partnerships, both Tanga and Limbe Hospitals have become regional (or even national) reference points for their competencies in the field of quality management and HIV diagnostics and care, respectively.
- Both partnerships have produced a number of peer-reviewed research articles to which both the African and the German partners contributed.
- Health workers from both Germany and Africa have found the partnership to be an invaluable learning opportunity and mutually beneficial relationship.
- Partnerships help staff involved to keep a focus on what CAN be done. Even in resource-poor settings, such partnerships can empower health workers to address local challenges and achieve improved outcomes in an effective and sustained way.
- Partnerships inevitably depend on key individuals, but they must also be firmly grounded in institutional commitment to lead to sustainable changes.

## Lessons Learned

Peer-to-peer partnerships can be an innovative, valid and complementary approach for development and health systems strengthening in low-income countries. The examples described in this report illustrate that:

- Partnerships can develop, implement and continuously adapt tailor-made local solutions to local problems, whether related to HIV and AIDS care and treatment, or to wider issues of quality improvements.

### Box 1. Key Messages

**Situation.** ESTHER Germany supports partnerships between hospitals in Germany and African countries.

**Approach.** In contrast to many other approaches to capacity development, these partnerships aim to generate a two-way flow of ideas and expertise, based on mutual professional respect between equals. They focus on jointly agreed local challenges and work through regular reciprocal visits, on-the-job training in both the German and African hospitals and via continuous joint monitoring of progress.

**Results.** Tanga Regional Referral Hospital in Tanzania has markedly improved the quality of care and a culture of quality has been firmly established at the hospital, which now shares its quality competence with other Tanzanian hospitals and in a South-South partnership with a hospital in Cameroon.

Enhanced laboratory, medical and nursing capacity has led to better HIV care and treatment at Limbe Hospital in Cameroon, which has become a regional centre of excellence.

**Lessons learned.** Hospital partnerships can strengthen health systems by empowering hospital staff in resource poor settings to develop small-scale, tailor-made solutions, which sometimes plant the seeds for larger improvements. The partnerships inevitably depend on key individuals, but they must also be firmly grounded in institutional commitment to lead to sustainable changes.



## ESTHER - a midwife to peer-to-peer collaboration

The smiling midwife carefully weighs and then swaddles Tanga Hospital's newest arrival in a colourful kanga cloth before handing him to his mother to suckle. The birth was so straightforward that Arafa, the baby's 21-year-old mother, was actually chatting on her mobile phone as she delivered her baby boy. Looking relaxed and happy Arafa says she felt very well looked after by the nurses in the new ten-bed labour ward. Each bed is shielded by a curtain for privacy and the ward appears clean and well organised.

Not long ago, Arafa's experiences might not have been quite so happy. The hospital's old delivery room was cramped and unhygienic. She might even have had to give birth on the floor if the other beds had been occupied. Now the ward looks neat and clean and patient care has been improved, and as a result the number of maternal and neonatal deaths has gone down - all thanks to the hospital's efforts to improve its quality of care.

'Quality improvement is our baby,' says Adam Lyatuu, the Tanga Regional Hospital Secretary. 'It was born here and then brought to life by our colleagues from Charité Hospital in Berlin'. The 'baby' he refers to, as proudly as any new father, is Tanga's Hospital Performance Assessment Toolkit. This set of instruments - and the quality management systems put in place as a result - has helped Tanga move up the hospital league table from being one of the worst to one of the best regional hospitals in Tanzania, says Joseph Nzige, the hospital's Quality Control Coordinator.

According to Adam Lyatuu, the 'midwife' that helped deliver these improvements was the five-year partnership between Tanga Regional Referral Hospital and Charité University Hospital in Berlin:

**'This North-South partnership was a dialogue and a two-way process. It was an equal partnership and we agreed together.'**

*Adam Lyatuu*



■ Arafa's baby is safely delivered in Tanga Hospital's new maternity ward unit.

ESTHER Germany, the project supporting this partnership, is a member of ESTHER, the *Ensemble pour une Solidarité Thérapeutique Hospitalière En Réseau*, a European initiative to improve health outcomes in low- and middle-income countries by strengthening the capacity of health professionals and their institutions through twinning arrangements between European and African, Asian and Latin-American hospitals and academic and research institutions. The resulting partnerships complement other international cooperation programmes and initiatives in the health sector in that they link medical teams across continents, enabling them to work as professional equals in order to learn from one another about how to improve patient care.

To show how such ESTHER partnerships come into being, how they work, how they benefit both partners and how they lead to sustainable changes, this case study will present two different examples: the partnership between Tanga Regional Referral Hospital in Tanzania and Charité University Hospital in Berlin, Germany, and the partnership between Limbe Regional Hospital in Cameroon and Rostock University Hospital, Germany.

## How ESTHER partnerships support capacity development in hospitals and beyond

In a global world, diseases know no borders. According to a new hard-hitting report by the UK-based Institute of Development Studies (Huff, 2015) the global response to the Ebola crisis in West Africa has highlighted the urgent need to think beyond the immediate, on-the-ground concerns of disease control and containment and to mobilize different, innovative and complementary approaches to strengthening health systems in low- and lower- middle-income countries.

The model of cooperation proposed by the European ESTHER Alliance - institutional partnerships and collaboration between health professionals across borders and continents - can be one such effective contribution. Pooling relevant knowledge and experience to work together in the face of universal challenges, whether in rich or poor countries, can improve health systems and strengthen the capacity of health professionals to provide better patient care and health outcomes.

France initiated the ESTHER Alliance<sup>1</sup> in 2002 to develop a joint programme called the 'Network for Therapeutic Solidarity in Hospitals against AIDS' in order to strengthen the skills and capacities of health professionals in developing countries for the care of people living with HIV and AIDS, together with United Nations organisations and the Global Fund to Fight AIDS, Tuberculosis and Malaria. The initial members of the Alliance consisted of France, Italy, Luxembourg and Spain, who agreed to set up the European ESTHER Secretariat based in Paris. In March 2004, four additional countries - Austria, Belgium, Germany and Portugal - ratified the Memorandum of Understanding, followed by Greece in 2006, Norway in 2008, Switzerland in 2011 and Ireland in 2012. In October 2012, the United Kingdom joined the Alliance with observer status.

The ESTHER model is based on North-South (and more recently South-South) hospital and institutional partnerships and twinning arrangements between research institutes, universities and civil society organisations. ESTHER activities in nearly 48 countries in sub-Saharan Africa, North Africa, Central and South America, Central and South-East Asia have led to the establishment of 550 partnerships.

Although originally set up to work primarily in HIV and AIDS, the European ESTHER Alliance has evolved and expanded its work to other global health priorities. This new agenda includes child and maternal health, malaria, tuberculosis and other infectious diseases, hygiene and patient safety, setting up blood banks and strengthening laboratory capacity. It has adopted a health system strengthening approach to improve the quality of care and treatment in health facilities and improve hospital management. It also involves institutional capacity development, improving drug procurement and supply management, and conducting operational research. Monitoring and evaluation is an important part of this institutional partnership model in order to understand why interventions work and underpin them with robust evidence.

The idea is that partnerships between hospitals and institutions act as catalysts for change and development and allow a two-way flow of ideas and expertise between professionals working on different continents. Unlike many other development initiatives in which short- and long-term consultants with different professional backgrounds advise the staff of partner organisations in low- and lower middle income countries, these peer-to-peer partnerships are between health professionals with similar fields of expertise working together on an equal footing over a longer time frame.

Obviously health institutions all over the world face the constant challenge of keeping abreast of scientific advances and research, new treatment guidelines and new diagnostic tools. Through peer-to-peer partnerships hospitals in developing countries can benefit from the professional knowledge and experience available in European health institutions and, in return, European health professionals can have access to research opportunities in these partner countries and learn from their counterparts in Africa or Asia about diagnosis and treatment of diseases not common in their own countries. At the same time, health workers in countries with resource-scarce health environments face the added challenge of having to scale up responses to the growing incidence of non-communicable diseases on top of the existing burden of infectious diseases. They can learn a great deal from European health professionals with experience in these areas through the models of cooperation provided by ESTHER partnerships, such as reciprocal visits, the exchange of ideas and experiences, workshops and on-the-job-training.

<sup>1</sup> [www.esther.eu/who-we-are](http://www.esther.eu/who-we-are)

## ESTHER Germany

Within the framework of the European ESTHER Alliance, each member country runs and funds its own partnerships, and since 2007 the German Federal Ministry for Economic Cooperation and Development (BMZ) has allocated funds for this purpose. The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH has been commissioned to coordinate the initiative through the ESTHER Germany Secretariat, staffed by a coordinator and a part-time senior technical advisor.

The Secretariat both initiates and facilitates partnerships, helping to set them up and bringing together potential partners with similar interests. Applications for ESTHER Germany support can be made by German hospitals, departments and institutions, jointly with a partner hospital/institution in a low- or middle-income country<sup>2</sup>. The average duration of a partnership is two to six years, usually operated in two-year phases.

The German ESTHER Secretariat assists both partners with:

- development of the proposal
- development of logframe and budget
- communication with BMZ and GIZ
- preparation and administration of the contract
- financial support (e.g. for reciprocal visits and exchanges)
- liaison with the European ESTHER Alliance and network of European partners
- networking with other partners such as the World Health Organization, the European Commission, the European and Developing Countries Clinical Trials Partnership and others.

Dr Brigitte Jordan-Harder, Senior Technical Adviser to the ESTHER Germany Secretariat, says that the unique aspect of these peer-to-peer partnerships, and what distinguishes them from most other international development approaches, is that they twin health professionals doing the same work in different countries so that they can share knowledge and experiences. The facilities they work in may differ enormously in terms of resources and funding, but their professional roles are essentially the same, allowing them to work together on the issues and challenges they face on an equal footing, in a relationship that is characterized by mutual understanding, respect and acceptance.

The areas of collaboration are decided jointly by the two interested partners, usually during an initial fact-finding visit and discussions with the ESTHER Germany Secretariat, to identify areas of potential beneficial interest. Once these areas have been identified, the GIZ health programmes or country offices (if these exist in the respective country) and the ministries of health and other relevant ministries in partner countries are consulted (usually through the GIZ country programme) to ensure that the aims of the proposed partnership are in accordance with existing health programmes, local needs and national strategies. Once everyone has agreed, the Secretariat draws up a contract between GIZ and the partner institutions, defining the objectives, activities, funding and time frame for the partnership.

The focus of each partnership varies. So far, these have included improved diagnosis and treatment of HIV/TB co-infection, improved adherence to antiretroviral drugs and second-line treatment, management of patients under second-line treatment, strengthening of laboratory systems, quality management, improved hospital hygiene and patient safety, screening for cervical cancer and Human Papilloma Virus and improved new born and paediatric care. Eleven different ESTHER Germany partnerships are currently running in eight different sub-Saharan African countries (see Table 1 for an overview of partners and their areas of collaboration).

The financial support to each partnership amounts to €100,000 per year and is typically used to cover travel costs for both sides as well as essential materials and equipment not available in the African partner country. Funding for the African partner institution is usually channelled via a sub-contract with the German partner or via the GIZ country office.

Every ESTHER partnership places a strong emphasis on results, with specific objectives and indicators that are clearly defined, and involving regular monitoring of progress made. Partners have to report biannually on the agreed outcome and indicators. Representatives of the German Secretariat conduct monitoring visits and external reviews are undertaken to ensure accountability and promote constructive discussions about methods, results and lessons learned.

To explore how this partnership model works in practice, the next two chapters of this report take a more detailed look at two different hospital partnerships supported by ESTHER Germany.

<sup>2</sup> To simplify matters these hospital and institutional partnerships will be referred to as hospital partnerships henceforth.



## Tanga - Berlin: Partners for quality improvement

### A focus on quality improvement

For the past 30 years or so, quality management has been central to health system reforms and better service delivery. Approaches to quality improvement generally involve a cycle of defining standards and protocols, regular assessments of the extent to which these are adhered to and the development, often in so-called quality circles, and implementation of quality improvement measures on the basis of these assessments.

As an increasing number of people living with HIV in low-income countries have gained access to antiretroviral therapy and need to be on permanent treatment regimens, the quality of the care and treatment they receive has taken on crucial significance. It is essential that HIV care and treatment programmes provide dependable, sustainable and high-quality health services in order to keep these patients in lifelong treatment. Poor quality clinical care can lead to low adherence to antiretroviral therapy, which in turn increases the risk of developing drug-resistant HIV strains and endangers the future effectiveness of treatment programmes (McCoy, 2005). Regular monitoring of the adherence to quality standards is therefore essential in the running and expansion of effective HIV treatment programmes as well as in the responses to other global health emergencies, such as the more recent SARS (Severe Acute Respiratory Syndrome) and Ebola outbreaks.

However, recognizing the importance of good quality care is one thing. Finding low-cost solutions in low-income countries facing acute shortages of resources and trained staff is another. This is what the ESTHER Germany partnership with Tanga Hospital in Tanzania set out to do.

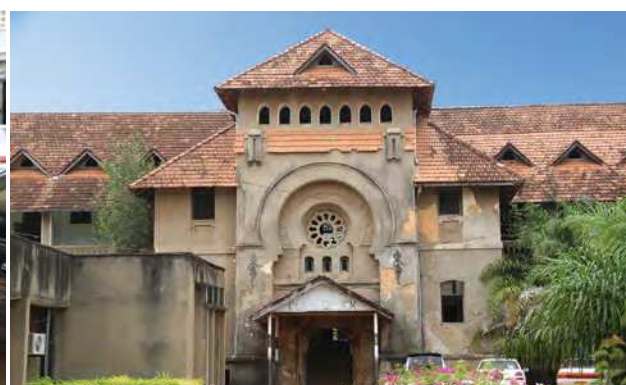
### The two partner hospitals

#### ■ Tanga Regional Hospital

Tanga is one of the 30 regions of Tanzania, a low-income country on the East African coast, with 43 million inhabitants whose average life expectancy at birth is 51 years (Tanzania National Bureau of Statistics, 2011). The overall HIV prevalence is calculated at 5.1% (Tanzania Commission for AIDS, 2013).

Tanga Region is located in the north-eastern part of the country, bordering Kenya to the north and the Indian Ocean to the east. Its links with Germany go back to the 19th century when Tanga was a colonial military post for German East Africa. The original hospital in Tanga town, built by the Germans in 1894, is thought to have been the first purpose-built hospital in Tanzania. Today the grand old hospital building overlooking the Indian Ocean has fallen into disrepair, and is surrounded by a sprawling complex of newer buildings linked by covered walkways and gardens, which make up the Tanga Regional Hospital.

The hospital is one of 20 public regional referral hospitals in mainland Tanzania set up in the 1980s as part of the government's strategy of decentralising health services to the regions. It provides general in- and out-patient services, HIV and tuberculosis clinics, antenatal care, and laboratory facilities. The hospital serves the town's rapidly growing population of around a quarter of a million, as well as the surrounding region of just over two million people (National Statistics Bureau, 2014); the region has an HIV prevalence rate of 2.4% (Tanzanian Commission for AIDS, 2013).



■ Tanga's original hospital, built by the Germans in 1894, and modern-day buildings.

According to hospital statistics, in 2014 some 17,644 patients were admitted, and 53,589 were treated and cared for at the out-patient department (hospital statistics, 2014). More complicated cases from district health facilities in Tanga Region are referred to the Regional Hospital, which is also a teaching institution for nurses and clinical officers. The hospital currently has 450 beds and employs some 355 workers, including 10 doctors, 12 assistant medical doctors and 175 fully registered and enrolled nurses (hospital statistics, 2015). Like most health facilities in Tanzania, Tanga faces an acute shortage of both financial and skilled human resources.

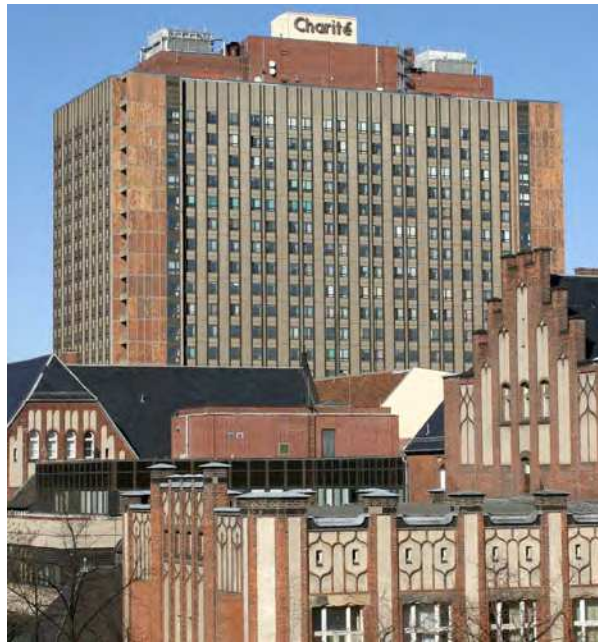
### ■ Charité University Hospital in Berlin

One of the largest and best-equipped hospitals in Europe, Charité University Hospital provides services across a wide range of specializations, from transplants to neurosurgery. It has 3,700 doctors and 13,100 other employees, with 100 clinics on four campuses generating a turnover of €1.5 billion a year (Charité website, 2015). Several German Nobel Prize winners in medicine and physiology come from Charité, among them Emil von Behring, Robert Koch and Paul Ehrlich.

The Accident and Emergency Department at Charité deals with more than 40,000 patients a year and the hospital has four intensive care units with 51 beds, which treat approximately 5,000 intensive care patients annually. Charité is also a teaching hospital, specializing in further education of medical staff. The hospital has 15 scientific research working groups centred on anaesthesiology, intensive care, emergency and pain medicine.

### Before the ESTHER partnership began

In 2005, the Tanga Regional Hospital's management team had started to think about adopting a quality improvement approach as a way of making better use of the very limited financial and skilled human resources at its disposal. Dr Baltazar Ngoli was then the Regional Medical Officer in Tanga and recognised that any quality improvement system introduced would need, above all, to be suitable for local conditions. 'We didn't want something that would run for a short time only,' he says. 'We wanted something that would be sustainable. That was the most important thing.'



■ Charité University Hospital in Berlin.

The Tanzanian-German Health Programme, which supported the health services in Tanga at the time, invited a young German doctor, Dr Götz Bosse, to come in as a consultant and provide the necessary technical advice. He had already worked on quality improvement in another region in Tanzania and brought both the necessary expertise and motivation to the task. Looking back, Dr Bosse remembers that his first impressions of the quality of care provided at the Regional Hospital were sobering:

'There may have been basic care but everything was so unstable, so irregular. You could not trust that the process would be the same today or the day after or in a month from now. Sometimes it worked, sometimes it didn't. It depended much more on the people that were there rather than on agreed standards for the processes themselves.'

*Dr Götz Bosse*

In the months that followed Dr Bosse and Tanga Regional Hospital's management team devised a Hospital Performance Assessment Toolkit which included itemised checklists for self-assessments, or assessments by peers, as well as guidelines for interviews with hospital staff and patients.

The toolkit was initially tested in the obstetrics department and it quickly and clearly identified where things needed to improve. The Regional Hospital's management team and the Regional Health Office were enthusiastic and proceeded to introduce it to additional hospital departments as well as to the region's four district hospitals.

The original Hospital Performance Assessment Toolkit did not, however, specifically look at the quality of HIV treatment and care. When a study conducted between 2006 and 2008 revealed an alarming 90% drop-out rate amongst the women and children treated at the hospital's HIV Care and Treatment Centre (Arreskov, 2010), the management team decided it was time to act. They got in touch with Dr Bosse who was now working at the Department of Intensive Care and Anaesthesia at Charité University Hospital in Berlin, and asked if he would support them further in improving the quality of care the hospital provided to HIV-positive patients. Dr Bosse's head of department at Charité was supportive of the idea, and the two hospitals decided to apply to ESTHER Germany for support to their partnership.

Following an initial fact-finding mission to Tanga in 2008 to discuss and define scope and objectives of their new twinning arrangement, ESTHER Germany agreed to support the partnership with an annual budget of €100,000. In 2010 the partnership and funding were extended for another two years, and once more until the end of March 2013, when ESTHER funding came to an end.

### Phase I: Devising a quality assessment approach for HIV treatment and care

The first task of the ESTHER-supported partnership between Tanga and Charité was to adapt the existing quality assessment tools for use in the HIV and AIDS Care and Treatment Centre and all other clinical and non-clinical areas of the hospital involved in caring for HIV-positive patients. The partners soon realized that this was an enormous task: given Tanzania's national prevalence of 5.1%, HIV typically reaches into every medical speciality and patients living with HIV are present through virtually every department, from out-patients to tuberculosis and antenatal clinics.

Using the structure-process-outcome model by Donabedian (see Box 2, p. 12) Dr Bosse and the Tanga team started by defining, for each department, standards for structural (infrastructure, availability of equipment and drugs, health personnel) and procedural (such as adherence to standard operating procedures) quality in HIV care, based on national and international evidence-based protocols and guidelines.

'We know that if we adhere to standards patients are better off and we decrease morbidity and mortality,' says Dr Bosse. 'We have it in our hands to adhere to the standards – whether in Tanzania or Germany. They may be different standards, but the principles are exactly the same. For example taking a patient's blood pressure and pulse rate three times a day. If you don't do that you might miss signs that a patient is bleeding after an operation and he might die.'

On the basis of the agreed standards, checklists were developed both for clinical and supportive departments (e.g. the pharmacy and the laboratory), each containing items for procedural and structural quality of key components of HIV care. The checklists were designed to be straightforward and easy to use, with items having to be rated on a 3-point Likert scale from 0 (0%) to 2 (100%) with 2 as the target standard representing good practice. The checklist-based assessments could generate immediate outcome indicators about how individual processes – such as counselling or an initial physical examination when patients arrived at the HIV care and treatment centre – were actually carried out. On this basis areas of weakness could quickly be identified, remedial actions could be undertaken and follow-up assessments could reveal whether these actions had been effective in improving the quality of care or whether further interventions were needed.

Together with its Charité partners, Tanga Regional Hospital's management team decided to establish three types of regular quality assessments:

- **Internal departmental self-assessments** in which healthcare workers conduct their own observational assessments using specially designed checklists for their own department.
- **Biannual interdepartmental hospital assessments** in which healthcare workers conduct observational assessments using checklists for departments other than their own.

## Box 2. The Donabedian quality model focusing on immediate outcomes

The **Donabedian model**, developed by Dr Avedis Donabedian, a health services researcher at the University of Michigan, provides a framework for examining health services and assessing the quality of care. According to this model, information about quality of care can be drawn from three categories: structure, process and outcomes.

Structure refers to the context in which care is delivered, including hospital buildings, staff, financing, equipment and availability of drugs.

Process describes the sum of all actions that make up health care, including the implementation of guidelines and adherence to standard operating procedures which define the transactions between patients and healthcare providers. Information about process can be obtained from medical records, interviews with patients and practitioners, or direct observations of healthcare visits. According to Donabedian, the measurement of process can also be used to measure the quality of care.

Finally, outcomes refer to all the effects of health care on the health status, behaviour, knowledge and satisfaction of patients, as well as on morbidity and mortality of populations. Since improving patient health status is the primary goal of health care, outcomes are sometimes regarded as the most important indicators of quality, although accurately measuring outcomes that can be attributed exclusively to health care can be difficult, as they may take time to become observable.

While Donabedian believed that any quality improvement scheme needs to attend to all three categories of the structure-process-outcome model, the focus of quality improvements should be on immediate outcome indicators because they can easily be observed and addressed. According to Donabedian's model, the information gathered through regular quality assessments makes it possible to identify precise areas in need of quality improvement interventions, and prioritise the use of limited resources to provide the best health care possible, as well as to improve safety and healthcare outcomes (cf. Donabedian, 1980).

- **External assessments** in which peers from another Tanzanian hospital or external assessors, such as Dr Bosse and his colleagues from Germany, monitor and observe the hospital's adherence to agreed quality standards.

Throughout, simplicity was the key to all quality assessment measures the two partners jointly devised and tested in this first phase: It only took a day or two to conduct the different assessments and a few hours to then collate the data with the help of a simple computer program. The process did not cost more than the time staff spent on it but it yielded valuable information on the basis of which hospital efficiency as well as staff and client satisfaction could be enhanced. After each assessment, feedback was given to the healthcare workers whose work was evaluated, the

results were publicly announced and the best departments rewarded with certificates and, sometimes, with additional funds from the hospital budget.

During the first two years of the partnership, several two-way exchange visits took place between Tanga and Berlin: Dr Bosse and some of his German colleagues visited Tanga three or four times a year for several weeks at a time to assist their Tanzanian partners with the development and implementation of the quality assessment tools and processes described above, and several members of the Tanga senior management team visited Charité to get a first-hand impression as to how quality assessments and improvements were carried out by their German partner.



## Phase II: From quality assessments to Continuous Quality Improvement

Whilst the first phase of the ESTHER partnership had enabled the staff at Tanga Regional Hospital to assess the quality of care and to identify areas in need of improvement, this did not necessarily mean, according to Dr Bosse and his colleagues, that they now knew how to instigate the corresponding quality improvements. The second two-year phase of the partnership therefore focused on just this: moving from quality assessments to a Continuous Quality Improvement process (cf. Agyepong, 2001).

Between 2010 and 2013, Dr Bosse and a colleague conducted a series of training sessions for the Regional Hospital's staff on how to establish and run effective quality teams and how to devise and implement action plans on the basis of the quality assessments. The sessions covered a wide range of organisational, clinical and technical skills, as well as leadership, communication, decision-making and organisational processes. Different adult teaching methods were used during these training sessions, including problem-based learning and authentic simulations to obtain an effective balance between theory and practice.

Looking back, Dr Bosse remembers that, at first, the Tanga staff found it difficult to understand fully how the quality teams were meant to work: 'It took a while for them to

understand that we are not coming in to tell them you have to do A, B and C. We would give them a dataset that showed obvious quality problems and we would say "Look, this is the situation – now, how do YOU want to go about changing things?" We would provide assistance with the assessments and their analysis, but when it came to proposing possible actions it was their ideas and actions that counted'.

In the course of this second phase of the partnership, Tanga Regional Hospital established 19 quality teams at departmental and at ward level. At the request of the hospital management team additional refresher training sessions in English and Kiswahili were arranged for them, blending teaching sessions with actual problems highlighted by the quality assessment process. These sessions largely focused on how to analyse the data collected by the assessment tools, how to prioritise action plans and how to make the best use of the quality teams.

As a further sign of its commitment to continued quality improvements, the hospital management team decided in 2012 to appoint a quality focal person for the entire hospital to coordinate the assessment process and the work of the departmental and ward quality circles. Joseph Nzige, who was appointed to this post, received training by Dr Bosse and his colleagues on research methodologies that enabled him to collate all the data collected during the hospital's quality assessments in order to analyse trends over time.



■ *Tanga's quality circles meet regularly to discuss quality improvements.*





■ *Joseph Nzige, Tanga hospital's quality focal person, is in charge of collating data from hospital assessments.*

As a consequence of these training sessions and the work of the quality teams, hospital staff now began to devise and implement various innovative solutions to problems their quality assessments had identified.

Poor hygiene standards, for example, were identified as a major problem throughout the hospital. When the quality improvement teams explored this issue, they realised that no one had direct responsibility for cleaning. Nurses (and sometimes even patients) were supposed to clean the wards in addition to their other duties, but given staff shortages rarely had time to do so. The solution they came up with was to make cleaning the specific responsibility of specially employed cleaning staff. The extra funds needed for this were raised by introducing fees for visitors using the hospital car park. Consequently, the wards are now much cleaner.

Five years ago the Surgical Department was the least hygienic ward in the hospital. Basic infection control has now, according to the hospital's statistics, reduced the incidence of septic infections after surgery. Enrolled nurse Abdi Mmaka is enthusiastic about the improvements: 'We enjoy the changes, because if the environment is clean, the patients do better and you yourself enjoy it. The minimisation of microorganisms doesn't just affect patients, it affects us'. The introduction of simple checklists has also helped prevent unnecessary mistakes and has made surgical procedures more efficient.

In addition to a multitude of smaller improvements at departmental level, the partnership also resulted in more comprehensive institutional developments at Tanga Regional Hospital: through their contacts with Charité Hospital, the Tanga management team realized that staff shortages were being made considerably worse by absenteeism and lateness and that better time management would improve the efficiency of available staff. With support from their German partners, Tanga's hospital management team introduced a new system: all staff would have to log in and out at the hospital gate and upon arriving at the wards. Although this met with some initial resistance, staff can now see the benefits of everyone doing their jobs properly.

Dr Baltazar Ngoli, the former Regional Medical Officer in Tanga, remembers how mind sets began to change:

**'Previously health workers would say quality is low because we have no skilled staff and no money, so there's little we can do. But when this partnership came in we realized there were huge opportunities for improvements which didn't depend on additional resources.'**

*Dr Baltazar Ngoli*



■ Nurse Mwajuma Bakari and the staff log book for the labour ward.

Mwajuma Bakari, a registered nurse at Tanga Regional Hospital since 1987 and in charge of its labour unit for the last 10 years, could not agree more. She says regular assessments and the improvements that often follow them have not only greatly improved the quality of care for patients but also made the hospital a much better place to work.

### Sharing the fruits of the partnership with other hospitals

After the Hospital Performance Assessment Toolkit had been devised, tested and approved by the Regional Hospital working with Dr Bosse, at the request of the Regional Medical Officer it was also introduced in five district hospitals in Tanga Region. From 2006 onwards, these hospitals used it to conduct annual quality assessments, identifying areas of weakness which they then tried to improve. However, their results were mixed.

A study Dr Bosse and colleagues conducted to compare the way the quality of care had developed in these hospitals between 2006 and 2011 showed that, initially, all hospitals which had introduced the quality assessments had improved their performance levels, confirming the positive effect of regular quality assessments on their own.

In the period between 2009 and 2011, however, only the Regional Hospital's performance improved further, while the performance levels of the other hospitals fell back to, or even below, where they started (Bosse et al., 2013).

The crucial difference between the Regional Hospital and the other district hospitals, which would explain these diverging developments, was the fact that the Regional Hospital, with the help of the ESTHER partnership, had begun to work with a Continuous Quality Improvement approach, with assessments followed by joint reflection in quality circles and the implementation of carefully devised action plans. Clearly, this second component made the whole approach not just more sustainable, but also more effective.

The Regional Health Office's Quality Coordinator had also noted these differences and requested, at the end of the first phase of the ESTHER partnership, that the lessons learned about continuous quality improvement should be shared with and extended to the five district hospitals. Although progress has been slow and somewhat uneven from hospital to hospital, the measures adopted by Lushoto District hospital are illustrative of the way in which the ESTHER partnership's benefits are now being shared across the region.



■ Lushoto District Hospital.

**Lushoto District Hospital** was established in 1967 and many of the existing facilities were built with support of German Development Cooperation. Like most district hospitals in rural Tanzania, it suffers from an acute shortage of trained staff: there are only three fully qualified doctors working in the hospital instead of the 8-23 recommended by Ministry of Health guidelines, and whilst there should be 23 medical officers<sup>3</sup>, the hospital currently only has seven.

Faced with these human resource challenges, the district hospital followed the Regional Hospital's example in introducing Continuous Quality Improvements to make better use of its meagre resources: two years ago, it established quality teams to draw up action plans based on the results of the regular assessments and more recently the hospital also appointed a quality focal person to coordinate all its quality improvement efforts. People were reluctant to take on what they saw as extra work at the beginning, says Hadija Denis, the new quality focal person, but with time they have begun to see the benefits.

Other district hospitals now come to learn from Lushoto, taking part in joint quality assessments and in quality circle meetings to learn how to reflect on assessment results and draw up action plans. Slowly but surely, the lessons learned by the Tanga-Berlin partnership are having an effect on the quality of care at all government hospitals across the region.

## Partnering across the continent

For its routine project review in 2010 the ESTHER Germany Secretariat decided to adopt a mutual peer review approach, with teams from different hospital partnerships taking part in each other's reviews. As part of this process, health professionals from Tanga visited Bamenda Regional Hospital in Cameroon, and vice versa.

This exchange was enthusiastically embraced by both sides, who felt that the challenges facing health professionals in the two countries were very similar and that they could learn from each other's ways of addressing them. Inspired by ESTHER's partnership approach, they proposed to form a new South-South partnership, and the ESTHER Germany Secretariat agreed to support this suggestion with funding for further reciprocal exchanges.

At the end of 2011, Dr Jordan-Harder visited Tanga to develop, along with selected members of the Tanga quality improvement team, a tentative concept and plan for this South-South cooperation. The concept and plan were further discussed with Bamenda's hospital team and adjusted accordingly.

### Box 3. Bamenda Regional Hospital, Cameroon

The North West Region is one of 10 provinces in Cameroon, with a population of around 2.2 million. It is divided into 18 health districts and 189 health areas with 11 management units and two fully-fledged treatment centres for HIV/AIDS.

With 400 beds, Bamenda Provincial Hospital is the biggest referral hospital in the province. It has been at its present site for over half a century and employs 319 staff members including 23 medical doctors and 3 dental surgeons. Services provided at the hospital include: internal medicine; paediatrics; obstetrics; gynaecology; dentistry; ophthalmology; physiotherapy; nutrition; X-ray services; pharmacy; palliative care; breast and cervical cancer screening; a vaccination unit; accident and emergency; and a specialised day unit for management of people living with HIV and AIDS (ESTHER partnership application, 2008).

In 2008 Bamenda entered into an ESTHER partnership with the Bernhard Nocht Institute of Tropical Medicine, University Hospital Hamburg Eppendorf, which ran until 2012. This partnership focused on improved treatment and care for people living with HIV and AIDS.

<sup>3</sup> Medical and Assistant Medical Officers in Tanzania require fewer qualifications and receive shorter basic training than doctors. The Government introduced this system in the 1960s to fill the gap in health service needs.

In 2012 a team from Tanga, accompanied by Dr Bosse from Berlin, visited Bamenda to advise on how to introduce regular hospital performance assessments and to adapt the tools developed in Tanga to the needs and specific situation in the Cameroonian partner hospital. This was subsequently followed by a visit from Bamenda's newly established quality improvement team to Tanga, to participate in a regular hospital assessment and in the development of an action plan. Thinking back to his first visit to Tanga, Dr Kinge, former Director of Bamenda hospital, recalls: 'There was much that they had in place that we felt we should be able to copy. It was the first time I was able to participate in that kind of exchange and I found it an excellent idea'. He says he brought back 'many, many lessons' and the first thing he did on getting back to Bamenda was to organise a week-long workshop on quality improvements to share what he had learned with his team.

Later in 2012, Adam Lyatuu, Tanga's Hospital Secretary, supported Bamenda in implementing its first full quality assessment and in drawing up an action plan. Since then, regular biannual visits have continued, during which the teams reviewed the action plans and achievement, carried out further assessments and helped Bamenda establish a quality improvement team as well as multiple quality circles.

Although German partners were involved in the first two South-South exchanges, this is no longer considered necessary, as the Tanga-Bamenda collaboration has become a partnership in its own right.

Comparing his experiences of these two types of ESTHER partnership, Dr Kinge thinks that the South-South partnership model can serve as a bridge for the North-South partnerships because the resource gap between them is relatively small:

*'Psychologically you tell yourself, ah – it really is possible to change things. Sometimes, in our North-South partnerships, when the gap is so wide, you say well, this is in Europe and this is in Africa, and things are destined to be like that. But when you see the difference in an African hospital, when you see that things can be improved in a similar context, you know that with hard work, determination and commitment, we can do better.'*

*Dr Thompson Kinge*

This South-South learning has not just been a one-way process: Tanga has also embraced ideas and lessons from Bamenda, including Bamenda's customer care system for dealing with patients' complaints. Following his visit to Bamenda Hospital, Joseph Nzige, Tanga's quality focal person, placed complaints boxes in all wards to encourage patients to give feedback about their hospital experience to the Tanga management team. The complaints patients submit to the hospital range from lack of respect and poor communication to corruption and negligence. Joseph Nzige receives, analyses and responds to them, always trying to mediate between complainants and staff to find resolutions. To allow patients to send their feedback after they have left the hospital, he added an SMS service to the procedure and is happy about the way it has been taken up. He describes Tanga's customer care procedure as 'made in Cameroon, modified in Tanzania'.



# Limbe - Rostock: Setting new standards in HIV care

## A focus on setting new standards and on continuing medical education

For the partners in Limbe and in Rostock it was clear from the start that their collaboration should reach out and have an impact beyond the confines of their two institutions. As centres of tertiary care and as teaching institutions, they set themselves the goal of ensuring that Limbe Regional Hospital could and would effectively play such a role: the partnership would establish an advanced laboratory and clinical service for HIV diagnosis, treatment and care that would serve the whole region; and it would also develop a culture of continuing education that would involve and be of benefit to medical, nursing and laboratory staff from hospitals throughout the region.

## The two hospital partners

### ■ Limbe, Cameroon

Limbe Regional Hospital is a 200-bed hospital in the South West Region of Cameroon and the region's principal referral hospital. Originally built around 1940, it now serves as a specialist referral centre for approximately two million people and has radiology, surgery, gynaecology and obstetrics, dental, ophthalmology, paediatrics, maternity and general medicine units. It is also one of 23 approved HIV and AIDS treatment centres in the country with laboratory services.



■ *Limbe Regional Hospital is one of 23 approved HIV and AIDS treatment centres in Cameroon.*

HIV prevalence in South West Region when the partnership first started in 2008 was about 8%, compared to a national average of 5.5% at the time. The hospital's HIV and AIDS treatment centre was seeing around 12,000 patients a year, and between 700 and 1,100 new patients a year were starting antiretroviral therapy or receiving treatment for opportunistic infections. At that time, at least 30-35% of the 200 hospital beds in Limbe were occupied by known HIV cases (ESTHER partnership application, 2008). An internal evaluation of hospital services revealed that one of the major problems in HIV care was the lack of diagnostic tools and routine laboratory techniques for the detection of HIV resistance during antiretroviral therapy and the identification of opportunistic infections, both of which, if not recognized in time, could result in ineffective therapeutic strategies.

### ■ Rostock, Germany

Founded in 1419, Rostock University in north-eastern Germany is the country's third-oldest university. It operates a hospital and several teaching and research institutes, with more than 1,500 students enrolled in the Medical Faculty's programmes. The hospital's Division of Tropical Medicine and Infectious Diseases consists of an in-patient ward with 19 beds, out-patient clinics for HIV and AIDS, tropical diseases, infectious diseases, travel medicine and Hepatitis B & C, as well as a Laboratory of Tropical Medicine and Parasitology. It runs a number of research projects on HIV, malaria, pneumocystis and schistosomiasis.



■ *Rostock University is one of the oldest in Germany.*



## Getting the partnership started

When ESTHER Germany first offered hospitals in Cameroon the possibility of entering partnerships with German hospitals, the regional hospitals in Cameroon's two English-speaking regions saw this as their opportunity. ESTHER-France had previously established several partnerships between French and Cameroonian hospitals, but these were all in the French-speaking regions of Cameroon.

The University of Rostock's Division of Tropical Medicine and Infectious Diseases had for some time been thinking about establishing a more long-term partnership with a hospital in a tropical region: 'For a department like ours, there are clearly many benefits in partnering with a hospital which treats many patients with the diseases we specialise in', says Dr Christoph Hemmer, a senior lecturer in the department. 'Until then, we had visited hospitals in developing countries, and there had been short-term cooperation. But what we were really looking for was a long-term arrangement'. So both Rostock and Limbe were very enthusiastic when ESTHER Germany approached them to discuss the possibility of forming a partnership.

In February 2008, Professor Dr Emil Reisinger, Dean of Rostock's Faculty of Medicine, Dr Christoph Hemmer, one of its senior lecturers, and Dr Alois Doerlemann, an adviser with ESTHER Germany at the time, visited Limbe to meet all relevant stakeholders and to explore, together with their Cameroonian partners, potential areas of cooperation. Dr Hemmer remembers the very warm and enthusiastic welcome they were given by Dr Thompson Kinge, the hospital's medical director at the time, and his team. All the doctors noted, however, that the laboratory would require significant modifications before it could accommodate new diagnostic methods for HIV patient care. 'The laboratory's glass slat windows let through humidity, heat, and dust, which covered nearly all surfaces', says Dr Hemmer. 'Also, there were power cuts every day, often followed by high voltage surges - sure killers for sophisticated laboratory equipment. Clearly, we needed to address those issues before installing any new equipment'.

Dr Hemmer also noted that Limbe Regional Hospital had very experienced and knowledgeable doctors who had already treated large numbers of patients with HIV and other infections. Over the years, they had developed considerable diagnostic and clinical acumen, but they lacked the diagnostic methods needed to confirm their clinical suppositions.



■ Doctors Akam and Kinge from Limbe Regional Hospital, with Professor Reisinger and Dr Hemmer from Rostock University Hospital.

Against this backdrop, and with the aim of spreading the benefits of the partnership widely, the two partners decided to focus on three fields of cooperation for the first phase:

1. The **introduction of more advanced diagnostic methods and technologies**, specifically the polymerase chain reaction (PCR) method, to Limbe's hospital laboratory, to allow for the identification of pneumocystis infections in HIV-positive patients. Pneumocystis was of interest to both sides since Rostock had an ongoing research project on it, and proving the presence of pneumocystis would allow clinicians in Limbe to treat these cases much more effectively.
2. The **improvement of workplace safety** for nursing, medical, and laboratory staff so that they, as well as patients, would benefit from the partnership and be motivated to contribute to it.
3. The **establishment of annual ESTHER symposiums for continuing medical education** on HIV-related topics, for hospital staff from the whole South West Region. In this way, any improvements implemented in Limbe would also be adopted by other health facilities of the South West Region of Cameroon.

## Phase I: Addressing the gaps

Soon after the start of the partnership, Limbe's medical director and several members of his team returned the initial visit of their three German colleagues to get first-hand working knowledge of Rostock's Infectious Diseases Department. 'It was interesting for me to see how they organise their infectious diseases clinics in Rostock', says Dr Kinge.

*'All of us, the partners from Rostock and from Limbe, saw the gaps between the worlds we were operating in. The major objective was to bridge these gaps as much as we could.'*

*Dr Thompson Kinge*

### ■ Introducing advanced diagnostic methods and technologies

The laboratory's limited diagnostic capacity was the first gap the partnership tackled. The Rostock partners invited Limbe's principal laboratory technician, Ms Mercy Bumah, to spend two months in Rostock, to be trained in the PCR method. Another two laboratory technicians from Limbe came to Rostock for similar two-month internships in 2009 so that by the end of the first phase, the Limbe Regional Hospital already possessed a small team of PCR experts.

In parallel, the Rostock partners purchased a PCR cyclor and other equipment for the laboratory of the Limbe Regional Hospital. They worked with the Limbe team to ensure that these expensive machines would be well protected: the laboratory windows were dust-proofed, and air conditioning was installed. A power backup system was implemented to safeguard the new machinery against power cuts and electricity surges. Once all this was in place, Dr Riebold, at the time the head of the parasitological laboratory in Rostock, Dr Fritzsche, head of the HIV day clinic of the University of Rostock, and Dr Herchenroeder, a virologist and medical biologist, spent between one and two weeks at the Limbe Regional Hospital in order to support Ms Bumah and her laboratory team in the introduction of PCR technology in Limbe.

This investment paid off. As the Limbe doctors had expected, and contrary to the widely-held view that pneumocystis played no role in Africa, 42% of the HIV-positive patients and only 20% of the HIV-negative control persons were found to harbour pneumocystis in their lungs. This finding became the topic of a scientific article published jointly by the Cameroonian and German partners (Riebold et al, 2014), and now also informs doctors in Limbe that they always have to consider pneumocystis, among other possibilities, if an HIV-positive patient develops pneumonia.



■ *Training laboratory staff to conduct polymerase chain reaction tests for HIV and pneumocystis.*

### ■ Improving workplace safety

The second gap the partners addressed in the first phase was workplace safety. Here, too, several activities were launched to protect hospital staff and patients from HIV and other hospital-acquired infections. Together with other colleagues, Dr Akam from Limbe and Dr Fritzsche from Rostock developed a standard operating procedure for steps to be taken after needle stick injuries. All staff were trained in the implementation of this policy, and antiretroviral drugs were designated for use by staff members who had suffered injuries from needles contaminated with blood from HIV-positive patients.

To increase the staff's awareness of work-related infection risks and to propose targeted measures for infected employees, the teams from Limbe and Rostock offered HIV, Hepatitis B and Hepatitis C testing to all staff members, including medical students and hospital cleaners. Over two-thirds of the 300 hospital workers agreed to be tested. Over half of these had suffered at least one needle stick injury and/or had had direct skin exposure to body fluids of infected patients. One hundred and forty-seven of the 237 staff members tested had been exposed to Hepatitis B, and in 15, the infection was still active. Four staff members had been infected with Hepatitis C in the past and four hitherto unknown HIV infections were discovered (Fritsche et al, 2013). As a consequence, Hepatitis B vaccinations were offered to all those who had not yet developed antibodies against Hepatitis B, and all staff members with hitherto unknown infections were referred to the day clinic for further care.

Another step towards reducing the risk of hospital-acquired infections was an assessment of the hygiene standards at Limbe Regional Hospital. Dispensers for hand disinfectants were bought and installed at the hospital, and a supplier for disinfecting alcohol was identified. Ms Ann Itoë, Limbe Hospital's hygiene specialist, spent one month in Rostock and received training and information regarding hygiene standards in Rostock's Infectious Diseases Department. On her return she passed on her knowledge to her colleagues, introducing regular hand disinfection and safe waste disposal.

#### ■ Establishing continuing medical education

The third gap which the partnership tackled was the lack of continuing medical education in the South West Region. In October 2009, the first ESTHER Continuing Medical Education Workshop on Holistic Care for Patients with HIV and AIDS was held in Limbe. The meeting was jointly organised by the Limbe Regional Hospital and the Rostock Faculty of Medicine. Over 60 health practitioners from more than 20 of the region's hospitals and clinics attended. Topics included epidemiology, clinical manifestations, and medical treatment of HIV and the opportunistic infections associated with HIV. In addition, other topics covered social care and counselling, both for adults, and for paediatric patients. All participants agreed that such workshops were urgently needed, and these workshops now take place every year.

## Phase 2: Advancing on the same path

In the second phase of the partnership, which ran from October 2010 to September 2012, the two partner hospitals continued to pursue the goals they had set themselves when their partnership started.

#### ■ Further expanding Limbe Hospital's diagnostic capacities

ESTHER funding enabled the partners in Rostock and Limbe to continue short- and long-term exchange visits for laboratory technicians and doctors. Staff from Limbe would first be trained in state-of-the-art facilities in Germany, and then consolidate their new skills during on-the-job training in their own working context in Cameroon, guided by visiting experts from Rostock. At the same time, doctoral students from Rostock visited Limbe for two to three months at a time to carry out research. These research projects arose from problems or questions identified by the staff in Limbe, so that they could help improve patient care, both at the Regional Hospital, and at other hospitals in the region. They included the studies on prevalence of pneumocystis among patients and of HIV, Hepatitis B, and Hepatitis C among hospital staff, which are discussed above.

One important step in developing Limbe's diagnostic capacities was the adaptation of the PCR method for assessing how much HIV is in the patient's blood. With this method, Limbe Regional Hospital is now better able to tell whether antiretroviral therapy is successfully suppressing this virus. Unlike conventional antibody tests, this method can also detect whether babies born to HIV-positive mothers are HIV-infected or not immediately after birth.

#### ■ Sharing the learning experience at the annual continuing education workshop

The continuing medical education workshops have now become a firmly established tradition and are proving very popular among medical, laboratory and nursing staff in the South West Region. Cameroon's Minister of Public Health, Mr André Mama Fouda, who has been in office since the partnership started, volunteered to become the workshops' patron, and every year, he or one of his representatives open and close the workshop.



■ *The ESTHER partnership has initiated a programme of continuing medical education for healthcare workers.*

These annual workshops have helped to spread Limbe's new standards of workplace safety, diagnostics and care throughout the South West Region. The policy for dealing with needle stick injuries has been adopted by at least 10 other hospitals and health clinics in the South West Region, and other hospitals have been encouraged to refer patients or to send specimens for more complex diagnostic procedures to the regional hospital. As a result, Limbe's laboratory is rapidly becoming a regional reference laboratory for diagnostics related to HIV and AIDS.

### Phase III: Building on achievements to further improve patient care

The partnership agreement was renewed for a third two-year phase in September 2013. Given the considerable progress achieved in Limbe's laboratory capacities over the first two phases, both the doctors in Limbe and the experts from Rostock felt that it was now time to expand that focus in order to also set new standards in patient treatment and care.

In July 2015, Dr Sylvain Nlend-Batam, head of Limbe's HIV day clinic, spent a month with partners in Germany, learning about clinical and laboratory aspects of HIV patient care in Rostock so that he could then transfer this experience and lessons learned about patient care back to Limbe. In addition, the partners have begun to establish an "Intermediate Care Unit" at the Regional Hospital Limbe. This high-dependency unit will be just one step below a full Intensive Care Unit in highly developed environments, with a patient-to-staff ratio of at least 3:1 or no more than three patients

per nurse, so that the staff can react quickly whenever complications occur. Medical monitoring equipment and oxygen concentrators are being purchased by ESTHER Germany. Such an Intermediate Care Unit can be of enormous help in improving the survival of critically ill patients, who may have severe pneumonia, sepsis or other life-threatening conditions.

At the same time, the partners have continued their established two-way exchanges of staff, with Rostock seconding doctoral students to work on joint research projects and the Limbe Regional Hospital sending laboratory, nursing, and medical staff to receive training in different parasitological methods, and in intensive and high-dependency care.

Although the laboratory services at the Limbe Regional Hospital have been much improved since the partnership started, Dr Hemmer believes the next challenge on the agenda for the partners is enabling staff in Limbe to, as he puts it, 'carry out comprehensive and meaningful troubleshooting. From time to time, one of the machines does not do what it should do – which often leaves our Cameroonian colleagues stuck. When one of us is around, that is not much of a problem because we can quickly help to identify and solve any problem. What we should now aim at is to help them develop the self-confidence and initiative to perform this trouble-shooting by themselves. They need to ask: What are the possible causes of the problem? How can we find out which of these causes is at work here? How can we fix it?'

The annual workshops on Holistic Care for Patients with HIV and AIDS are continuing, bringing together partners from both ESTHER Germany and ESTHER France. In addition to medical topics, the social aspects of care and treatment have become increasingly important in 2014 and 2015. They deal with questions such as: How do we encourage patients to continue to take their medication? How can we reach marginalized patients who may be hard to reach through normal hospital structures? When and how should we inform HIV-positive children why they always have to take tablets? After all, even the best possible medical care will be ineffective if patients are unable or unwilling to continue treatment faithfully.

Just like the Tanga-Berlin partnership, the partnership between the hospitals in Limbe and Rostock has come a long way since it started in 2008. The next two sections of this report will present the results achieved and the lessons learned throughout this journey.



## Results of the partnerships

There is an old African proverb – ‘today’s seed is tomorrow’s harvest’ – that seems particularly appropriate when one evaluates the developments that have taken place in the course of the partnerships described in this report. Whilst the seed of quality management was initially planted by Tanga’s hospital management team, the ESTHER partnership with Charité in Berlin then nurtured and carefully tended it, helping it blossom and spread, both across Tanzania’s Tanga Region and to Bamenda in Cameroon. The Limbe-Rostock collaboration has also borne many fruits and continues to do so, both for students and senior staff in Rostock and in Limbe. This chapter will summarise some of the results the teams in Tanga, Bamenda, Limbe, Berlin and Rostock have harvested at the individual, the institutional and the wider political level by working together in ESTHER-supported partnerships.

### Better quality of care at Tanga Regional Hospital

**Improved quality of services and changed mind sets:** The results of all departmental self-assessments, which were gathered over a five-year period from 2009 to 2014, show that 12 of the 16 HIV-related services that were monitored achieved marked quality improvements (Bosse, forthcoming). Since the assessments capture actual clinical practices performed by doctors and nurses on a regular basis, these findings prove that the partnership has helped to improve the quality of health care in three-quarters of the departments concerned.

Above all, says Tanga’s Hospital Secretary Adam Lyatuu, the ESTHER partnership with Charité and the hands-on approach to quality management it introduced has helped to change staff’s mind sets. ‘Other hospitals do not smell quality like us’, he says. Today, health workers in Tanga are keen to continuously improve the quality of care and their working conditions with the resources they have at their disposal instead of waiting for assistance from outside.

**Improved institutional capacities:** The ESTHER partnership has not only changed the individual health workers’ behaviours and mind sets, it has also firmly established a culture of quality throughout the institution. Departmental self-assessments now take place on a weekly basis, and are complemented by biannual external hospital assessments, enabling the hospital to monitor its performance continually and to take corrective actions as needed. A hospital quality improvement team, 19 departmental and ward quality improvement circles and a full-time quality focal person for the hospital ensure that this culture is maintained and that quality improvements continue. They include, amongst many others, a more efficient hospital laboratory, where the time to complete full blood tests has been reduced from 24 to four hours, haemoglobin results now take 30 minutes instead of an hour and malaria results are available in five minutes. They also encompass measures towards a more patient-friendly hospital: ‘Uliza Hapa’ – ‘Ask here’, says the sign on the new information desk set up at the hospital entrance.



■ Quality circles draw up action plans for quality improvements.





■ 'Ask here', says the sign on the new information desk.

Patients' rights as well as the costs of drugs and services are now clearly displayed on a sign at the hospital gates in an attempt to reduce corruption. Also, the hospital pharmacy is now open 24 hours a day so that patients can be given the drugs they need when they need them.

**Improved health outcomes:** That the quality of patient care has improved on the labour ward where Arafa delivered her baby is not just reflected in the increasing number of women who choose it for their delivery but also in the much smaller proportion of those who die when giving birth in the hospital. According to Tanga hospital statistics, deliveries increased from 5,627 in 2012 to 7,635 in 2014 whilst the number of maternal deaths remained static at 35, representing an overall fall in the proportion of maternal deaths from 0.62% to 0.45% (hospital statistics, 2015). Similar trends have been observed at Lushoto District Hospital.

**Tanga's quality management approach has become a national reference point:** The many positive changes brought about by the partnership's work on quality in Tanga Regional Hospital have not gone unnoticed at national level. Staff from other hospitals in the country - such as Mbeya in the south-west of Tanzania - have come to visit, members of Tanga's quality improvement team have travelled to other hospitals to talk about the lessons learned, and the Ministry of Health and Social Welfare has said it wants to adopt Tanga's hospital performance assessment tool for national use.

### A high-performance lab and continuing medical education in Limbe

In the course of its partnership with the University of Rostock's Department of Tropical Medicine and Infectious Diseases Limbe hospital has become a centre of excellence for laboratory diagnostics, HIV treatment and care and for continuing medical education.

#### ■ Improved human capacities

Since the partnership started in 2008, about 10 members of Limbe Hospital's staff have visited Rostock to be trained in new standards in hospital hygiene, in advanced laboratory methods such as PCR, in ultrasound imaging, intensive care, and other areas of relevance for their work. Once back in Limbe, this training has been further consolidated by guidance and supervision provided by doctors from Rostock, who spend between two and six weeks in Limbe every year. Consequently, the level of expertise among Limbe's laboratory, medical and nursing staff has been enhanced, and the range of quality services the hospital can provide has been broadened.

Correspondingly, the doctoral students and more senior medical staff from Rostock have found the partnership to be an invaluable learning opportunity. 'Each time I visit Limbe I see and I learn something new, something I could not have learned in Rostock. All of us know this, and we appreciate it very much', says Dr Hemmer.

### ■ Improved institutional capacities

With its high-performance laboratory and its improved capacities in HIV-related diagnostics, treatment and care, Limbe Hospital is today the reference laboratory for the South West Region and a tertiary care centre in the true sense of the word.

The partnership has also strengthened both Rostock and Limbe as teaching institutions: medical students in Rostock regard it as a great privilege and a strong point of the Rostock medical curriculum, that they can visit Limbe to gain practical and research experience in the tropical environment of Cameroon. At the same time, the annual ESTHER partnership workshops have gained the Limbe Regional Hospital an excellent reputation as the main provider of continuing medical education in the south-west of Cameroon.

### ■ Improved health outcomes

According to Limbe Hospital statistics, the number of HIV-positive patients seen in the sample month of January increased from 1,877 in 2009 to 2,846 in 2013. During the same time, their one-year survival rates increased from 1,532 (81.6%) to 2,617 (92%), while the number of known deaths within one year fell from 6.8% to 2%, and the number of 'no-shows' (i.e. lost to follow-up) also declined from 217 (11%) to 171 (6%).

### ■ Joint research and publications

Many of the ESTHER partners, including the two described in this report, use their intercontinental cooperation for joint research. Through the partnerships, German and African medical researchers can share their expertise and experience of writing up findings for international publication, whilst gaining valuable opportunities to work with African hospitals to study tropical diseases and working contexts that are very different from those in Europe.

The Tanga-Berlin partners, for example, have produced a joint research paper on the effects of the quality assessments introduced by the partnership, entitled 'Improving quality in HIV care: A longitudinal study on the effects of implementing quality assessments at a regional hospital in North-Eastern Tanzania' (Bosse et al, forthcoming.).

The partnership between Rostock and Limbe has also been a two-way learning process, with several joint research projects conducted and results published internationally. As already discussed, the first research project on pneumocystis - an important cause of pneumonia in HIV and AIDS patients which was not previously thought to have played a role in Africa - demonstrated that it is indeed present in HIV-positive patients in Africa and that treatment regimens need to take this into account (Kouanfack, 2009).



■ *More deliveries, reduced maternal mortality at Tanga and Lushoto hospitals.*

Another study provided valuable information about the presence of Hepatitis B and C and HIV infections in health workers (Laurent et al, 2011), demonstrating the need for staff, especially for those dealing with blood products and HIV patients, to receive Hepatitis B vaccines - a standard practice in resource-rich countries.

Dr Pius Kuwoh, the new Medical Director at Limbe Hospital says that previously doctors in Cameroon had little experience of conducting operational research, and even fewer opportunities to publish results in international journals. He is therefore particularly pleased about this joint research aspect of his hospital's ESTHER partnership.

### Invaluable learning opportunities for German doctors

Seven years into his university hospital's partnership with the Limbe Provincial Hospital in Cameroon, Dr Hemmer is convinced that German institutions benefit from the ESTHER partnerships as much as their African partners do. 'I wanted to get involved with a fascinating project', he recalled, 'and to have direct involvement with tropical medicine. I saw it as a chance to learn something, and to teach something. Being part of this partnership has been very rewarding'.

According to Dr Hemmer, the partnerships enable German doctors and medical students to learn how medicine is done under very different conditions than those to which they are accustomed. 'This scheme allows us as German doctors and medical students to see new things and to hone our clinical skills by taking good histories, doing subtle clinical exams and by weighing what we know about the frequency and likelihood of conditions to make a differential diagnosis'.

Dr Bosse from Charité University Hospital in Berlin fully agrees with this positive assessment: 'There might be different levels of care, but at the end of the day it comes down to how well we adhere to standards. It is not that we are at 100% and they are at 40%. We also struggle - we don't reach perfection. It doesn't matter how new buildings are - it is all about the process'. The biggest lesson he has taken back to Berlin from working with Tanga, he says, is that enthusiasm for change is probably the single most important factor for success: 'It is great to see how excited they are when we calculate the assessment results and how frustrated they get if they are just a bit lower than last year. There is a lot of willingness to change, and I have great respect for that'.

## Lessons learned through partnerships

### ESTHER partnerships allow the two partners jointly to develop tailor-made, sustainable solutions to local problems

Looking back on 28 years of work in development cooperation in the health sector, Dr Gerd Eppel, principal advisor for GIZ's health programme in Cameroon from 2005 until 2013, believes that, compared with standard development aid programmes, hospital partnerships have unique advantages: 'In hospital partnerships, practitioners meet practitioners on the ground. They can tackle real and specific problems and, together, try out individual solutions, there and then and on the spot'.

Dr Eliakimu, Assistant Director of the Tanzanian Ministry's Health Services Inspectorate and Quality Assurance Division, supports this view. According to him, the main advantage of the partnership's quality improvement approach is the fact that it was tailor-made to the capacities and needs of Tanga's regional and district hospitals and that it has been tested repeatedly over a number of years and been shown to work.

For Dr Bosse, too, it is the sense of local ownership that distinguishes the Tanga approach from other quality improvement initiatives currently supported by various development partners in Tanzania:

*'It is as if you're all taking a journey and one person travels by foot, the other goes by bus and the other flies. They will all reach their destination, but the person that flies is there within three hours, but hasn't really lived in the country, whereas the person that walks may walk for three months but he has really understood the people and problems on the ground. In hospital partnerships, this is what we do: we take the time to walk together'.*

*Dr Götz Bosse*

### ESTHER partnerships help partners focus on what can be done

Dr Brigitte Jordan-Harder, Senior Technical Adviser to the ESTHER Germany Secretariat, recognizes that some of the challenges facing African hospitals, such as the shortage of human and financial resources, and procurement and supplies of drugs, cannot be changed by hospital partnerships alone because these ultimately depend on national policies and direction. But in her view the work done on quality improvement in Tanga is an excellent example for the way in which hospital partnerships foster development by building capacity and changing mind sets. In Tanga - and through the South-South partnership also in Bamenda - health workers have been motivated to improve both the quality of care and their own working conditions with the resources they have at their disposal. Committed to this quality management approach, they now go ahead and solve problems themselves instead of waiting for assistance from outside.

Dr Baltazar Ngoli, former Regional Health Officer in Tanga Region, confirms this point of view: 'Before the partnership started, the hospital staff would say, "the quality is low because we have no skilled staff - there's no way we can change this". But when we began to work with Dr Bosse and his team, we realized there were huge opportunities for improvements without depending on additional resources. This was learning by seeing. With the assessments, we saw where we were not doing well and we also saw what we had to change to do better. At the same time we realized that quality management is a never-ending process: if Charité hospital is still practising quality circles - a hospital which is far, far ahead of us - that must mean that quality improvement has a clear beginning but it will never have an end. I think this partnership has opened our eyes to see there is always a chance for improvement'.

## ESTHER partnerships are most effective where they complement existing German and other international programmes in the health sector

The two ESTHER partnerships described in this report work in countries in which Germany also supports more comprehensive bilateral cooperation programmes in the health sector. While this is not a necessary prerequisite for such partnerships – ESTHER Germany also supports several partnerships in countries where this is not the case – it seems that hospital partnerships can be particularly effective where they complement and coordinate with other German or international health programmes.

Both in Tanzania and in Cameroon, the fact that health experts working in bilateral programmes were not just based in but also very well connected in these countries helped to get the partnerships off the ground and facilitated communication with the ministries of health when it was needed. In Cameroon the cooperation between the bilateral health programme and the ESTHER partnerships ensured that their achievements and lessons learned were directly fed back into the policy dialogue at national level. Also, the German bilateral health programme provided a full-time German doctor as an integrated expert to one of the Cameroonian ESTHER partners in order to support the positive developments initiated by the partnership on a more continuous basis.

Dr Gerd Eppel, former head of the GIZ health programme in Cameroon and now based in Germany as head of a programme advising the BMZ on its policies in the field of sexual and reproductive health, is convinced that ESTHER

partnerships can become an even more effective instrument of German Development Cooperation if they are designed, from the start, to complement existing health programmes in a given country.

## ESTHER partnerships must be grounded in institutional commitment

For the ESTHER Germany Secretariat, which has to date supported 12 hospital partnerships in Africa, there is yet another crucial lesson learned which will guide its decisions about the design of future ESTHER partnerships: in order to allow for a more long-term cooperation the partnerships require the full commitment of both the African and the European institutions, not just the commitment of one or two committed individuals working in them.

Up until now, the German partners have mostly been university hospitals, which also means that their staff do not just have clinical but also academic duties, resulting in enormous workloads and many competing demands on their time. Only institutions that regard ESTHER partnerships as a valuable opportunity for learning and fruitful exchange will allow their medical staff to use some of their time for regular missions to – and communication with – their African partner hospitals. Where such institutional commitment is missing and committed individuals move on to another post, partnerships are eventually likely to falter.

One challenge for ESTHER Germany's next phase is therefore the recruitment of German partners who recognise the added value that an ESTHER partnership can bring to their institution as a whole. Dr Gerd Eppel believes that, for example, Germany's larger private hospital operators might be suitable candidates who could support ESTHER partnerships as part of their corporate social responsibility portfolio, giving interested medical staff a chance to be part of extraordinary development projects, to broaden their clinical experience and to contribute to a worthwhile cause.



■ *Limbe's Doctor Kinge warmly greets Professor Reisinger, his ESTHER partner from Rostock.*



## Looking ahead

What does the future hold for such partnerships? Building on the experience gained over the last ten years from the twinning of African and German hospitals, and with growing recognition of the potential of this partnership approach as an effective instrument of development cooperation in health, the Federal Ministry for Economic Cooperation and Development is now planning to:

- Scale up existing ESTHER partnerships so that they can also support the strengthening of health systems to be better prepared for pandemics such as Ebola and other diseases. In this context BMZ has approved funding to scale up pandemic preparedness in four existing partnerships (including the Limbe-Rostock partnership described here).
- Help set up new ESTHER partnerships in partner countries where Germany is working to support pandemic preparedness and health system strengthening.
- Broaden the type of partners that ESTHER Germany works with to include, for example, private hospitals and non-governmental organisations which may be able to bring different perspectives, resources and expertise to the partnership approach.
- Establish and strengthen links between ESTHER partners and existing organisations and networks (such as the African Partnerships for Patient Safety (AAPS) of the WHO Patient Safety Programme), which may have similar objectives and fields of operational research.
- Explore ways of developing ESTHER Germany into a sustainable long-term programme, capable of delivering these future objectives.

## Peer Review

To be included in the German Health Practice Collection, a project or programme must demonstrate that it comes close to meeting the majority of the Collection's criteria (see Box 4, p. 31). On the basis of the hospital partnerships described in this report, the two expert peer reviewers concluded that ESTHER Germany's approach to supporting hospital partnerships appears highly relevant for health systems strengthening in low-resource countries in sub-Saharan Africa and therefore worth sharing as case study in the German Health Practice Collection.

### Effectiveness

Both reviewers considered that the two partnerships described in the report had been effective in that they have led to improved outcomes through improved processes (e.g. quality improvements leading to reduced hospital maternal death rates and surgical infections in Tanzania and more effective laboratory diagnosis in Cameroon, leading to improvements in clinical care). However, one reviewer noted that a more systematic approach to monitoring and evaluation of the partnerships' interventions would be needed to demonstrate the effectiveness of the two ESTHER projects over time and in comparison to other programmes.

### Transferability

The reviewers agreed that peer-to-peer partnerships are transferable, within and beyond the health sector, with potential for many more hospitals and other institutions to become part of such twinning arrangements. At the local level both partnerships shared their learning with other hospitals in the region, and even across borders in a South-South partnership, thus enabling local innovations to be scaled up and spread.

### Empowerment

Empowerment is the essence of the hospital partnership approach and the reviewers agreed that this had been amply demonstrated in the two case studies. From the outset healthcare workers treat each other as equals and jointly tackle local issues they have identified themselves and which they have an interest and commitment to solve. They are empowered to develop their knowledge and skills through

a range of contemporary learning methods, including joint activities with peers from other institutions, mentoring, and exchange visits, etc. They also receive training in organisational, clinical and technical skills as well as the softer skills of leadership, communication and decision-making and multi-disciplinary team working. One of the expert reviewers also considered joint research and publication to be one of the real achievements of the Tanga and Limbe partnerships.

*'One of the most meaningful sentences in this report to me is: "... if Charité hospital is still practising quality circles - a hospital which is far, far ahead of us - that must mean that quality improvement has a clear beginning but it will never have an end. I think this partnership has opened our eyes to see there is always a chance for improvement.' This is empowerment'*

*A peer reviewer*

### Gender

Gender is not explicitly addressed in the document so the peer reviewers both found it difficult to comment on gender in relation to these particular case studies. However they acknowledged that ESTHER's peer-to-peer approach involves healthcare workers without gender discrimination, and since many healthcare workers in both Tanzania and Cameroon are women, female staff have benefitted from improved working conditions and better training, and female patients have clearly directly benefitted from the Tanga Hospital partnership as shown in reduction of maternal deaths rates.

### Quality of monitoring and evaluation

The reviewers thought that the case studies in this report provided good examples of how monitoring and evaluation is firmly embedded in the quality improvements adopted, with results analysed regularly and actions taken for further improvements. However, one reviewer concluded that the monitoring and evaluation systems put in place by the partnership needed to be more robust and to more clearly distinguish between results that can be specifically attributed to

the ESTHER partnership and others that may be the product of other interventions or circumstances. For example, while maternal mortality and HIV transmission rates may have been reduced over a period of five years, this may not or only partially be related to the ESTHER programme.

### Innovation

The expert reviewers agreed that systematic peer-to-peer partnerships based on equality, respect and mutual learning are a relatively innovative and recent approach in development cooperation. At local level, quality improvements introduced have empowered staff to come up with innovative solutions to address local issues rather than just applying standard responses. The South-South approach of partnering across lower-income countries and adapting solutions from one country to another is also innovative (e.g. with the customer care model). Collaborative partnerships may also develop their own dynamics, which allow further innovations and modifications, as more locally adapted ideas and needs come into play. However, this all depends on building good relationships between the partners themselves and is not a guaranteed outcome of the ESTHER process itself.

### Cost-effectiveness

The reviewers noted that cost-effectiveness is not explicitly addressed in the report and further studies over a longer time frame may be required to provide firm evidence on institutional health partnerships. However, they agreed that

the two partnerships described here appear to be relatively low-cost, effective and sustainable. While some capital investment may be required (as in the case of the laboratory at Limbe) and there must be a budget for exchange visits, on the whole the partnerships described are not resource intensive.

### Sustainability

The expert reviewers pointed out that by definition a partnership is a long-term commitment, as opposed to a short-term project, which means the partners can work towards sustainable solutions from the start. As changes become embedded in the institution, as illustrated in Tanga and Limbe, a good indicator of sustainability is when a successful intervention is recognised by the Ministry of Health and adopted for wider use, as was the case in Tanga and, at regional level in Limbe. However, one reviewer pointed out that the projects described in this report have not been running long enough to assess long-term sustainability. Where projects are overly dependent on the commitment and enthusiasm of one or two individuals, sustainability can be put at risk when those staff transfer to another job or lose interest.

Overall, however, the expert reviewers concluded that peer-to-peer partnerships between hospitals are an innovative and relevant approach for human resource development and health systems strengthening in low-income countries and also provide reciprocal benefits for German hospital partners.

#### Box 4. Publication process of the German Health Practice Collection

Each year, experts working in GDC-supported initiatives propose projects that they regard as good or promising practice to the Managing Editor at [ghpc@giz.de](mailto:ghpc@giz.de). Proposals are posted on the Collection website ([health.bmz.de](http://health.bmz.de)) and several specialist fora to allow GDC experts and the interested public to compare and rate them. Informed by this initial assessment, an editorial board of GDC experts and BMZ officers select those most worthy of publication. Reports are written by professional writers following on-site visits, working with the local partners and GDC personnel who jointly implement the projects. Draft reports are peer reviewed by independent scholars and practitioners, emphasising eight criteria:

- Effectiveness
- Transferability
- Participatory and empowering approach
- Gender awareness
- Quality of monitoring and evaluation
- Innovation
- Comparative cost-effectiveness
- Sustainability

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**In Germany:** Dr Brigitte Jordan-Harder, Senior Technical Adviser, ESTHER Germany Secretariat; Dr Götz Bosse, Consultant Anaesthetist at Charité University Hospital in Berlin; Dr Christoph Hemmer, Senior Lecturer at the University of Rostock; Dr Gerd Eppel, head of the sector initiative 'Population Dynamics - Sexual and Reproductive Health and Rights', GIZ.

**In Tanzania:** Dr Eliudi Eliakimu, Assistant Director, Tanzanian Ministry of Health, Health Services Inspectorate and Quality Assurance Division; Dr Jumanne J. Karia, Tanga Regional Hospital Director; Dr Asha Mahita, Regional Medical Officer; Mohamed Mshima, Regional Administrative Secretary; Dr Adam Lyatuu, Hospital Health Secretary; Joseph Nzige, Quality Improvement Focal Person; Dr Rehmah Maggid, regional quality improvement focal person; and all the staff and patients at Tanga Regional Hospital and at Lushoto District Hospital.

**In Cameroon:** Dr Thompson Kinge, Former Medical Director of Limbe Hospital, now Director of Bamenda Hospital, and Dr Pius Kuwuh, Current Medical Director of Limbe Hospital.

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## Annex. Current partnerships supported by ESTHER Germany

Table 1. Current partnerships supported by ESTHER Germany			
Country	African Partner	German Partner	Focus of partnership
Cameroon	Limbe Regional Hospital, south-west Cameroon	University of Rostock Medical School, Department of Tropical Medicine and infectious diseases	Improved quality of and access to HIV-related services, training and human capacity development, technical capacity building and research
Ethiopia	Addis Ababa University, Radiotherapy Centre and Department of Gynaecology and Pathology and School of Public Health, College of Health Sciences	Martin Luther University of Halle-Wittenberg, Saale, Department of Gynaecology	Awareness and prevention strategies for cervical cancer, policy development and better access to cervical cancer treatment
Ethiopia	Adama Science and Technology University, Adama, School of Health Sciences	University Hospital Düsseldorf, Department of Gastroenterology, Hepatology and Infectious Diseases	Better prevention, diagnosis and management of infectious diseases in new borns and scaling up of PMTCT services
Ghana	Komfo Anokye Teaching Hospital, Kumasi	University Hospital Hamburg-Eppendorf, Bernhard Nocht Institute of Tropical Medicine	Improved care for HIV and AIDS patients, better monitoring of antiretroviral therapy and better adherence to treatment
Ghana	Battor Catholic Hospital, Upper Volta Region	Charité University Hospital Berlin, Department of Gynaecology	Improving access to testing for cervical cancer in decentralised health structures
Malawi	Kamuzu Central Hospital, Lilongwe	University Hospital Heidelberg, Institute of Public Health	Strengthening clinical care and management capacity of the Department of Medicine at Kamuzu Hospital, improved diabetes services and better antibiotics stewardship

Country	African Partner	German Partner	Focus of partnership
Malawi	Lighthouse Trust, Lilongwe	University Hospital Cologne, Department for Internal Medicine	Strengthening the role of the Lighthouse Trust as a leading provider of HIV treatment and as a research centre
Rwanda	Butare University Teaching Hospital	Charité University Hospital Berlin, Institute of Tropical Medicine and International Health	Improved infection control and hygiene
Tanzania and Cameroon	Tanga Regional Referral Hospital, Tanzania and Bamenda Regional Hospital, Cameroon	Charité University Hospital Berlin, Department of Anaesthesiology and Intensive Care Medicine	Quality improvement of care in all departments
Tanzania	Mbeya Referral Hospital, Mbeya, Department of Infectious Diseases	Ludwig Maximilian University Munich, Department of Tropical Medicine	Improving quality of services for cervical cancer screening and treatment; improved management of people living with HIV under second-line treatment
Uganda	Holy Family Virika Hospital, Fort Portal	Charité University Hospital Berlin, Institute of Tropical Medicine and International Health	Improvement of maternal and neonatal health care

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