



Performance Based Funding in Rwanda, a comparative study

April 2007,

Kigali

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Acronyms:

ADVAS	: Association des Districts et Ville pour l'Amélioration de la Santé
CORDAID	: Catholic Organisation for Relief and Development Aid
CBO	: Community Based Organisation
HC	: Health centre (centre de Santé)
HD	: Health District (District Sanitaire)
FOSA	: Health Formation (Formation Sanitaire)
HIV	: Human Immunodeficiency Virus
HMIS	: Health Management Information System
MINISANTE	: Ministry of Health (Ministère de la Santé)
MINECOFIN	: Ministry of Finance
MINALOC	: Ministry of Local Government (Ministère de l'Administration Locale)
CBMI	: Community Based Micro insurance (Mutuelle de Santé)
MPA	: Minimum Package of Activities
NGO	: Non Governmental Organisation
OPD	: Out patient department
PASSB	: Programme d'Appui aux soins de Santé de base
PBF	: Performance Based Funding
SIS	: System of Health Information (Système d'Information Sanitaire)
TBA	: Traditional Birth Attendants
VCT	: Voluntary Counseling and Testing

Acknowledgements:

This is the draft version of the report on a study for CORDAID Rwanda. The study is part of the minor 'As the World Turns' at the University of Twente, The Netherlands and coördinated by Cordaid Rwanda. It includes 16 interviews with health centre chiefs and 60 surveys among the personnel of health centres in 2 different districts. The research project took place during a period of 10 weeks, from January 22nd 2007 until April 6th 2007. For me it was my first experience outside of Europe, and my first field study experience. I wish to thank all those who have helped me during the internship, without them I would not have been able to do my work in the way I've been able to do it now. In the first place I wish to thank Peter Bob Peerenboom for his input, his reflections upon my ideas and of course the initial opportunity to get in contact with Cordaid Rwanda. Christian Habineza for his guiding and help in retrieving information. Joy Clancy for her advice and support. The team of Cordaid Rwanda has been great for me and the contacts I've been able to arrange with their help have been very valuable to my research. Last but not least I would like to thank Lydia Hinnewinkel and Christian Barnbeck for their hospitality, their advice and the numerous discussions, on so many different topics that they helped shaping my opinion and understanding the context of 'Rwanda'.

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1.0 Introduction:

The first chapter will explore the context of the research, an introduction to the host organization, the country of Rwanda and the health system of Rwanda. As Rwanda is a country with an infamous history the chapter will start off with a sketch of the background.

1.0.1 Background

This paragraph will give an introduction to Rwanda and sketch a context for the field study. The social and economical context of the country are elemental aspects of the functioning of the health system in Rwanda. Since November 1959, the first registered eruption of violence between Hutu and Tutsi, Rwanda has known violence, unrest and power struggles. Eventually resulting in the genocide of 6 April 1994. Within barely 100 days over 800 000 Rwandans, mainly Tutsis and moderate Hutus, lost their lives and many more fled the country. The genocide had left the country's infrastructure destroyed, its people traumatized and its economy devastated. Unrests near the border with DR Congo, Uganda and Burundi lasted for another 3 years. 97% of Rwanda's population was involved in the genocide as either witness, victim or participant. The impact of the genocide has been enormous and still the country has not fully recovered from the effects of it. Many educated Rwandans were killed or have fled the country, those who fled are still hesitant to return to Rwanda making qualified personnel scarce. Rwanda is still largely depending on foreign aid, 70% of the annual budget comes from donors. Although the government is trying hard to stabilize the country. The government has been investing in infrastructure, security, good governance, transparency and decentralization. Although heavily depending on foreign aid and good harvests the country seems to be doing better every year. Official reports are enthusiastic about the progress the government is making on their priority topics. However, the credibility of statistics is often doubtful as well as its interpretation because the reality is often inconvenient. Success stories, allowing only minor criticism, are necessary to keep the government in place and the country stable. Rwanda is with a GDP of 264\$ (IMF, 2006) still one of the poorest countries in the world, ranked 171 out of 180 members of the International Monetary Fund¹. 90% of the Rwandans is engaged in subsistence agriculture² and 60% percent of the population is living below the poverty line. Despite the fact that 90% of the population gains its income in the agricultural sector, only 40% of the GDP has its source in agriculture. A recent study, still unpublished, of the World Bank showed that Rwanda's economy is growing, but that the growth is mainly on the accounts of big companies and wealthy investors. This observation is supported by the Rwandan ministry of finance³. The overview report of 2006 shows that the economic growth in the agricultural sector, has even declined with -0,4%(Economic performance 2006 and outlook 2007 P10)! With inflation rates of 8 ~12% annually a real economic growth rate of 5%, and a decreasing income from agriculture (due to erosion, increasingly impoverished soil and a higher percentage of crops solely for own consumption) Rwanda will have a tough job ensuring living standards for everyone. Lately, on March 13th 2007, Senator Odette Nyiramilimo, who is executive secretary of the RPRPD⁴, stated that the country is facing rising poverty levels due to increasing population density. She claims that Rwanda has one of the world's highest birth rates. This statement is supported by Dr Jean Damascene Ntawukuriryayo, minister of health, he stated during the same meeting the following: " (...)The average number of children per couple is six; the country's population has quadrupled in the past 50 years and it's nearly nine million people, and is expected to double again by 2030". The high birth rates, the instable economy and the scarcity of skilled personnel make that the country is still facing heavy challenges to reach the Millenium Development Goals⁵.

¹ International Monetary Fund, World Economic Outlook Database, April 2007

² Agriculture on plots of land producing only enough food to feed the family working it.

³ *Economic performance 2006 and outlook 2007* – musafiri, Ministry of finance and economic planning. Rwanda, 2006

⁴ Rwandan Parliamentarians of Population and Development (RPRPD)

⁵ "The Millennium Development Goals were adopted by all the world's Governments as a blueprint for building a better world in the 21st century." Kofi Annan

1.0.2 Cordaid Rwanda

Catholic Organisation for Relief and Development Aid (CORDAID) is a Dutch Non Governmental Organisation (NGO) which delivers support to regions in need of relief and development. Their strategy is to achieve sustainable development by supporting its local partner organisations with expert knowledge and financial means. In Rwanda, Cordaid had been operating in the Cyangugu province since 1998. At first to bring emergency relief after the 1994 genocide, later Cordaid Rwanda moved their interests to support sustainable development of the health conditions in Cyangugu, a rural province in the west of Rwanda. With the big administrative reform of 2006, the former province of Cyangugu has been divided in two Districts, Rusizi and Nyamasheke. In 2001 favourable conditions allowed Cordaid to commit itself to innovative performance based financing (PBF) in Cyangugu. Cordaid called upon the expertise of external consultants, Robert Soeters and Peter Bob Peerenboom. Robert Soeters had previously been involved in contracting and performance based funding in Cambodia since 1999. Peter Bob Peerenboom was contracted for his experience in funding of public health. By January 2003, all 24 health centres and four district hospitals had signed contracts with Cordaid. In 2005 Cordaid reduced their funding to the payment of the salaries, equipment and necessary means for the Cordaid Rwanda team. At this point the responsibility for the payment of contracts and the adequate funding of health centres and hospitals was transferred to the Ministries of Local Government (MINALOC). Responsibility of the verification of performances was transferred to the Ministry of Health, (Minisanté). Cordaid Rwanda has now a supporting (non-financial), controlling and researching role in the development of the health system. Their action radius has increased from the Cyangugu province to the new West Province covering 7 districts. Nowadays the experience from Cyangugu is being used as an example for other districts in Rwanda. As a result Cordaid Rwanda is switching their focus more and more to providing trainings to teams of other districts and doing studies on different topics to optimize and increase evidence base for the performance based funding technique.

1.1 Health care in developing countries

According to the World Health Organisation⁶, health care embraces all the goods and services designed to promote health, including “preventive, curative and palliative interventions, whether directed to individuals or to populations”. The organized provision of such services may constitute a health care system. Health care systems in developing countries often face difficulties in assuring that everyone has access to good health care. Quality of care, utilization of health services, geographical accessibility, cost-efficiency and equity issues are common challenges, therefore developing countries strive to optimize the health system continuously. Health is the basis for individual productivity, it is critical for the long-term development of a country. “*Ill health is not simply a consequence of poverty, it is an aspect of it. A large body evidence now supports the hypothesis that health is a crucial determining factor of economic development*” (Ministry of Health, Rwanda, 2005)⁷ Cordaid Rwanda's baseline study in 2003⁸ showed that in Cyangugu people fall ill 2,43 times per year, on average. This causes a vicious circle of poverty and ill health: illness -> no production + treatment fees -> catastrophic financial situation -> further poverty and illness. The need to break with the vicious circle of poverty has made the health sector an important part of the government's Poverty Reduction Strategy Paper⁹ (PRSP). Performance of the health system must be strengthened in order to improve the health of the population, ensure equitable financing of health, and meet the legitimate expectations of the population. The Rwandan government operates with the PRSP and

⁶ World Health Organisation, World Health Organization Report 'Why do health systems matter?'. 2000.

⁷ Government of Rwanda, *Health sector strategic plan 2005-2009*. 2005, p1.

⁸ Soeters, R. et al., *Comparison of two output based schemes in Butare and Cyangugu provinces with two control provinces in Rwanda*, The Hague, 2005.

⁹ Poverty Reduction Strategy Papers (PRSP) describe a country's macroeconomic, structural, and social policies and programs to promote growth and reduce poverty, as well as associated external financing needs. PRSPs are prepared by governments through a participatory process that involves civil society and development partners, including the World Bank and the International Monetary Fund (IMF).

vision 2020, a framework to reach the ambitious goals for 2020. To realise the goals for the health system in 2020 there is a need for increased performance, expressed by the Rwandan Minister of Health¹⁰, “To respond to the Rwandan Government ambitious plan for the country sustainable development as detailed in its 2020 Vision, we strongly believe that quality of care must continuously be a national priority.” Quality levels, availability of qualified staff, motivation levels and cost-efficiency in the health sector of Rwanda are still far away from Western standards. Different technologies are being applied to reform the health system. A central information system, HMIS, has been introduced to monitor performances to a great level of detail as well as to support NGO's in their need for 'management information'. Community based micro-insurances, 'mutuelles', have been introduced and more and more health districts are switching to Performance Based Funding techniques to contract health centres and hospitals. **(possible addition of more techniques (zie artikel))** This report focuses on the impact of Performance Based Funding as a technology to improve performance and quality of health care.

1.1.1 Quality of healthcare

In this report quality and quantity will be frequently used terms, in this chapter an outline will be given of what is meant if those terms are used. Quality of a product or service is a vague expression. Quality as perceived by a customer can be different from quality as perceived by experts or suppliers. To define the term quality of health care, experts generally agree on the construct as shown below. Based on over a decade of experience of using Quality Assuring methods to improve health care in developing and middle-income countries throughout the world, the Quality Assurance Project (QAP)¹¹ has identified nine dimensions that comprise quality care as described in the first table (Franco, Silimperi, et al. 2002). When terms as quality or performance are used in this report, it will refer to the definition in its broadest sense unless defined different.

DIMENSION	DEFINITION
Technical Performance	Compliance with technical standards.
Access to Services	Removal of geographic, economic, social, organizational or linguistic barriers to care.
Effectiveness of Care	Degree to which desired health results are achieved.
Efficiency of Care	Extent to which minimal resources are used to achieve desired results.
Interpersonal Relations	Effective listening and communication, establishment of trust, respect, responsiveness, and confidentiality.
Continuity of Services	Consistency of provider where feasible and appropriate, as well as timely and appropriate referrals.
Safety	Degree to which risk of injury, infection, or side effects is minimized.
Physical Infrastructure/ Comfort	Amenities of care such as physical appearance, cleanliness, comfort and privacy.
Choice	Choice of provider, treatment, or insurance plan, as appropriate and feasible. Access to information that allows client to exercise autonomy.

The dimensions describe quality care from a professional point of view. Quality care from the population's perspective is the tangible and personal experience for patients, their families, and communities—often with life or death consequences. Waiting time, satisfaction with the service,

¹⁰ Dr Jean Damascène NTAWUKULIRYAYO. *A word from the minister*. Available from: <http://www.moh.gov.rw/>

¹¹ *Maximizing quality of care in health sector reform: the role of quality assurance strategies*. LACHSR report no 64, p4-6.

care of the staff and a good reception are aspects which matter for patients. Quality assurance experts have identified six determinants of quality care. Five are characteristics of the health system: staff motivation, staff competence, adequate resources, appropriate content of care, and good flow and organization of care. The sixth refers to the client and community, whose full participation in the process of care is an important determinant of quality care. A complete list of determinant is presented in the table 1.2 below. For high quality of care to be realized, these determinants must be present at the point of service delivery. (LACHSR report No 64, QAP,2005)¹²

DETERMINANT	DEFINITION
Staff Motivation	Staff must be willing to exert the necessary effort to carry out services according to standards and in a manner that is respectful of the user (Franco, Bennett et al. 2002).
Staff competence	Staff must have the ability to do what is needed, including the skills to know what clients need and treat them with respect (Kak et al. 2001).
Adequate resources	Resources (human and material) to provide appropriate care in an equitable and accessible manner are available.
Appropriate content and process of care defined	The “what” of care must be defined (including interpersonal communications, health promotion, etc), based on evidence about what is known to be effective and what is appropriate in that setting (Marquez 2001).
Good flow and organization of services along a continuum of care	The system of care delivery and support must be organized such that it can provide efficient and acceptable services to clients, ensuring equity, access, continuity, appropriate referral and good coordination along a continuum of care (Massoud 2001).
Active participation in defining and receiving care by client/community	Clients and communities are motivated and empowered to participate actively in determination of what and how services are offered, in care decisions, and in compliance with mutually negotiated/agreed upon treatment plan.

1.1.2 Technology to reform the health system

Rwanda is engaged in a health system reform and given the emphasis on quality as a desired outcome and the power of Quality Assurance strategies to have an impact on quality of care, an exploration of strategies to achieve such goals is essential. The following section provides an introduction to quality assurance concepts, principles and strategies.

- Stewardship and steering strategies, regulatory actions such as rules, laws and decrees to standardize or change provider behavior. Examples of such strategies are centralization / decentralization initiatives, promoting awareness about citizen's rights and responsibilities in healthcare.
Separation/redefinition of functions (insuring, financing, providing) and regulation of insurance systems.
- Financing mechanisms, income generating mechanisms that provide resources for healthcare, preventive services, early detection, and health promotion. Payment mechanisms that provide funds to individual and institutional providers of healthcare, preventive services and health promotion. Examples of such mechanisms are tax policies, user fees, social and private insurance schemes, community financing, financial incentives based on performance and payment to provider organizations (global budget, per citizen, per diagnosis).
- Healthcare guarantees strategies. This is the specification of a package of health benefits to be provided to all citizens or specified subpopulations. Criteria may include reduction of disease burden, efficiency in resource allocation, equitable access and others. Strategies for such

¹² The Quality Assurance Project (QAP) is funded by the U.S. Agency for International Development (USAID)

- guarantees are defining of which services will be covered for the overall population (vaccinations, HIV services) and defining of service packages for subpopulations such as pregnant women, the indigents or the elderly.
- Delivery, the determination of how services are to be provided and by whom, both sector-wide and within specific service delivery settings. Examples of such strategies are human resource interventions, innovations in information systems, allocation of more resources to primary care and less to secondary care.

This research report is on performance based funding, a financing mechanism. However, PBF as it is applied in Cyangugu is broader than only the 'financing mechanism' part of the health system reform spectrum. Decentralization, promotion of the consumer's voice, equity issues and financial accessibility as well as defined packages of services and the system of remunerating services are all essential elements of the development of the health system in the PBF districts under Cordaid Rwanda's responsibility.

Performance based funding is an alternative way of funding health service providers. Which ways of funding can be considered 'standard' and what other different approaches of funding exist? The most commonly practiced funding approach is input based funding. To go short, with an input based approach an health service provider writes a plan of action for a certain period and accompanies this with a cost estimation. A fund holder (Government or donor) will then allocate its budget among the applicants. This is a very basic system, however some extensions exist. In Rwanda USAID has a budget of 75\$ million to spend on their HIV / AIDS program for the 5 years (USAID 2006)¹³. USAID has formulated its intentions, their goals and their expectations and based on these organizations can compete for funding. This way organizations have to think of a competitive but realistic business plan and get the responsibility to achieve targets. However, for this project results are not yet available, as the project will start at the beginning of 2007. Another approach to funding is subsidizing, this is a more focused funding approach. In this system a fund holder allocates a certain budget to subsidizing certain services, drugs or treatments (HIV/ Malaria) to stimulate the use of them. Many low-income countries have also introduced user fees for publicly provided health services. User fees are a way of relating utilization rates to income, a mechanism to allow money to follow the patient¹⁴(Tallbot. 1979). The user fees are usually only one element of a package of reform measures (World Bank 1993¹⁵);). User fees have an obvious drawback: their potential negative effect on access to health care. Various studies have researched the effects of user fees on diverse groups: '*In many cases, partly because of poor implementation, utilization decreased significantly after user fees were raised, affecting the poor in particular (Creese 1991; McPake 1993; Gilson et al. 2001). However, in some cases where fee revenues were used for quality improvements, studies have shown increased utilization, in particular by lower income groups (Litvack and Bodart 1993; Levy-Bruhl et al. 1997; Audibert and Mathonnat 2000). and exclusion errors (Gilson et al. 1995; Willis and Leighton 1995).*' (W. Hardeman et al. 2004: p1)¹⁶

An approach to funding which has only recently come into use in the field of health is Contracting. Now being used in different variations in New Zealand, Australia, South Africa, Haïti, Cambodia and Rwanda. In Asia, Bangladesh and Cambodia the Ministry of Health tried to find an appropriate approach to motivate health workers employed by the government. In Cambodia many of the health workers were paid very low salaries (8-10\$ per month) compared to neighboring countries. The low salaries caused great motivation problems as many governmentally employed workers started to run private clinics simultaneously. In 1998 and 1999 the Ministry of Health in Cambodia started experiments with contract based funding in eight districts, covering 1 million people. Encouraged by the initial results further research was conducted and the technique of contracting

¹³ Request for Applications USAID-RWANDA-696-A-07-001-RFA HIV/AIDS Clinical Services Program in Rwanda

¹⁴Talbot JA, *The Death of the Asylum: A Critical Study of State Hospital Management, Services, and Care.* New York, Grune & Stratton, 1978

¹⁵Worldbank, *World development report 1993; investing in health.* oxford university press, 1993

¹⁶ Wim Hardeman et al., *Access to health care for all? User fees plus a Health Equity Fund in Sotnikum, Cambodia,* New York, Oxford University Press, 2004

was further developed. Dr Robert Soeters, consultant on public health operating for HealthNet International in Pereang, Cambodia, published papers in 2000¹⁷ and 2003¹⁸ documenting the results and the developing of the contracting mechanism in Pereang. The reported results were impressive, out of pocket expenditures dropped with 40% and other indicators such as institutional deliveries and consultancies increased by 100 to 300%. Based on these experiences HealthNet International introduced Performance Based Funding to Rwanda in its Butare project in 2001. Kabutare and Gakoma, two health districts in the province Butare, started payment of performance based subsidies in 20 health centres early 2002. This project ran until July 2004. In January 2002 Cordaid started a baseline study¹⁹ in Cyangugu, several introduction seminars took place with community representatives, provincial administrative authorities and health facility representatives. In September 2002, the Cyangugu provincial authority requested Cordaid to start with immediate effect in Bushenge and Gihundwe districts, followed in January 2003 with the remaining two health districts Mibilizi and Kibogora. In 2005 contracting, based on performances, was introduced to the HIV/AIDS services in Cyangugu. And as of today Cordaid Rwanda has still a very prominent role in the development of the PBF technology. In 2006 Cordaid Rwanda started projects to contract district hospitals. Extending the focus from health centres and community based programs to the more complicated district hospitals. The Belgians, Coopération Technique Belge (CTB), introduced PBF in Kigali, Kigali Ngali and in Gitarama in 2005. Based on the experiences with the PBF approach, the Ministry of Health has adopted PBF as one of the key elements in their Strategic Plan 2005 – 2009. The PBF districts have shown successes in lowering out of pocket health expenditures, increasing utilization rates and patient satisfaction. The results of the last 3 years in Cyangugu are encouraging. Out-of-pocket health expenditure decreased by 62% from \$ 9.05 to \$3.45 per person per year. Patient satisfaction increased from 85% to 95% and the percentage of respondents declaring that user fee payments had been 'catastrophic' decreased from 2.5% in 2003 to 0.7% in 2005. The proportion of woman delivering in a health facility increased from 25% to 60%. And in order to expand their production health facility managers created 120 new jobs for skilled and previously unemployed workers. A great step forward in securing a sustainable source of funding was made in 2005. The contracting approach then became a chapter in the financial law of Rwanda. The adoption of contracting into national policies on a general level, broader than 'only health system reform' has made Rwanda the first African country fully engaged into performance based funding.

2.0 Performance based funding in Rwanda

This chapter outlines the basics of the technology of Performance Based Funding and how Cordaid Rwanda has been using PBF as a tool to achieve their development goals. Consecutively in paragraph 2.1 the problem definition is given and research questions are formulated. First of all an introduction to contracting, more specifically performance based funding, will be given. The term contracting is too general to define the Performance Based Financing relationship in the health sector. Because contractual arrangements should not only focus on the judicial aspects of rigid contracts and profit orientation, but also emphasize supportive partnerships between different actors, who share similar social aims such as the Millennium Development Goals (Perrot, 2004).²⁰

¹⁷Soeters R, Griffiths F., *Can overnment health workers be motivated? Experimenting with contract management: the case of Cambodia*. Paper presented to the international Symposium on health system financing in low-income countries in Africa and Asia. France, Clermont-Ferrand, 30 November – 1 December 2000.

¹⁸Soeters R, Griffiths F., *Improving government health services through contract management: a case from Cambodia*. Health policy Plan 2003; 18:74-83.

¹⁹Soeters, R. et al., *Comparison of two output based schemes in Butare and Cyangugu provinces with two control provinces in Rwanda*, The Hague, 2005.

²⁰ Perrot J. *The role of contracting in improving health systems performance*. Discussion paper Geneva: World Health Organisation; 2004. Available from: <http://www.who.int/contracting/en>

Cordaid Rwanda has been engaged in contracting health centres since 2002, delivering development aid and, with the support of consultants, developing the technique of PBF. The empirical research in the Cyangugu province is creating an evidence base, in international perspective, to permit evaluation of the impact of differing types of contractual arrangements on the performance of health systems and identification of best practices, taking account of sociocultural differences. The experience in Rwanda has drawn international attention and as a result of the encouraging experiences further research on PBF is being stimulated by the IMF and the World Bank, an interesting demonstration of their trust in PBF is a recent of the world bank.

7 December 2006, the World Bank announced another \$50 million grant will be given to Rwanda, *“One of the successes of Poverty Reduction Support Grant (PRSG II) that the third PRSG will continue to promote is decentralization, particularly through the transfer of capitation grants in education, the performance-based contracting of high-impact health services via local health centres, and the expansion of access to clean water in the rural areas of Rwanda,”* said Agnes Soucat, the World Bank’s Task Team Leader for the project.

2.0.1 Performance Based Funding, a technology to achieve development

Cordaid is using Performance Based Funding as a means to reach its development targets. Their goals are to increase accessibility of healthcare, geographically as well as financially, and to strengthen the voice of the population so that they can demand better quality. Cordaid has been looking for ways to improve health systems in a more sustainable way. Their strategy to operate through local organisations and the focus to improve the system and empower the population made Cordaid engage itself in experiments with Performance Based Funding. Why?

Performance Based Funding is an innovative technology aiming to purchase qualitative and quantitative performance of health service providers. The approach of awarding funds to health service providers creates an opportunity for health centre managers to increase their budgets. The entrepreneurial spirit of the health centre chiefs is inspired by an atmosphere of competition and rewards, performance is seen and rewarded.

The theory behind PBF assumes that managers utilize innovative and creative management strategies, to improve utilization rates, quality of services, cost-effectiveness of services and motivation of staff. Through supervision & verification, the transparency and accountability of health centres will be improved resulting in a reduction of money wasted due to corruption. Meanwhile the Quality Assurance (QA) supervisions provide an excellent opportunity to give on-site training and advice, using the prospect of increased incentives as a leverage. The directness of feedback and the significance of impact on the total primes greatly affect effectiveness of the QA supervision.

Increasing personnel's motivation is a fundamental part of PBF as well. Staff motivation is essential to have personnel exert the necessary effort to carry out services according to standards and in a manner that is respectful of the user. PBF inverts the traditional human resource management approach of punishment for failures and non-performance. Such change in HRM greatly affects the health worker's attitude, despite that management scientists have been trying to determine the optimal strategy to motivate workers, as of today no such perfect strategy exists. The outcome of an approach depends on many social and cultural factors. In Rwanda employees need to be satisfied with the salary levels first before they develop a desire to be empowered. However success in Sub-Africa causes friends and family to be jealous, one will be obliged to take the responsibility of success and help neighbours and family. To achieve its targets and to optimize the effects of PBF, Cordaid Rwanda has committed itself to other aspects of health system reform as well. On the population level Cordaid Rwanda put effort in strengthening the population's voice by cooperating with community based organisations (CBO's). The CBO's take questionnaires and verify patient records to take note of patient remarks and their overall satisfaction with the received service. On the level of responsibility and policy for health centres Cordaid Rwanda integrated the administrative and technical branch of the health system in ADVAS. ADVAS is a committee in which the District and the Hospital were united to bring the policy makers and the service providers closer. Since the introduction of PBF as a general policy, the committee of ADVAS is not

longer necessary. Now there is the 'comité de pilotage', a steering committee in charge in which several experts from different ministries participate. The steering committee is in charge of the functioning and follow-up of health care projects. It is a similar cooperation as ADVAS, but on the higher levels of district and ministry. Cordaid even concludes in their report to WHO that they: 'believe that the only way to ensure a sustainable system is to adopt performance based financing at the national policy level and develop a financing mechanism through the national budgeting process.'

2.0.2 Performance Based Funding by Cordaid Rwanda

Cordaid Rwanda has adapted its performance based funding technique to circumstances and user groups, at this moment there are actually 3 forms of PBF operational. and at this point there are actually 3 forms of PBF. Contracting on community level, contracting of health centres and contracting of district hospitals. A district typically hosts about 1 or 2 district hospitals and 10 to 15 health centres. Healthcare starts at small 'posts' where vaccinations, advice on family planning and prenatal consultations are provided. More curative services are provided by the health centres where a 'package of minimum activities' (PMA) is offered. In this package there are services such as deliveries, vaccinations, family planning, prenatal consultations, minor surgeries, curative consultations, HIV testing and consultations, pharmacy services, hospitalization and other curative services. In more complicated cases the patient, who needs more care or has to be hospitalized for more than 48 hours, needs to be transferred to a district hospital. District hospitals have several specialised departments and are able to treat most patients. Rwanda has three referral hospitals. Those patients who are in need of a special surgery or need to see a specialised doctor are referred to referral hospitals. Performance based funding of health service providers started at the least complicated level of health care, the preventive and small curative services.

2.0.3 Different forms in Performance Based Funding

Each level of health care demands for a specific approach to purchase quantity and quality from service providers. When Cordaid Rwanda started to engage itself in PBF it started with a focus on the quantitative aspect, increasing the utilization of services. PBF of community based health services is the first form of PBF used by Cordaid Rwanda. The community based services are preventive services such as the spreading of bed nets and anti malaria drugs. Health centre animators are contracted to operate within the population, they are responsible of increasing awareness of the advantages of visiting health centres and guiding patients through administrative procedures. The more patients an animator brings to a health centre, the higher will be their bonus. This form of PBF has a 'preventive' character.

The second form of PBF is a lot more complicated than the PBF on community level. It is mainly focused on quantitative aspects of healthcare on the level of health centres. Cordaid has developed 13 indicators to measure quantitative performance of Health centres. Results on these indicators can be measured and verified relatively easily. The Performances of health centres are now monthly evaluated by representatives of the ministry of health on district level, primes are rewarded based on their evaluation reports. However, a good quantitative performance does not necessarily imply a good qualitative performance. Finding the right balance between quantitative and qualitative performance indicators has proven to be a tough but essential part of PBF. Therefore, now in 2007, based on experiences and best practices from the last couple of years performances of health centres get evaluated twice. Every month the district administration (Les Unités Santé et Famille) grants a payment based on the results of 13 quantitative indicators. This sets the '100' level for the funding, every quarter a delegation from the responsible district hospital, doctors with expert knowledge on quality norms, visit the health centre to measure a more extended list of 120 quality performance indicators. The experts provide on-site training of the staff in points the health centre failed to improve. Based on this quality evaluation the '100' level gets decreased by a percentage. An health centre scoring only 50% on the quality evaluation will see their quantitative funding reduced by about 50%. After the funding has been granted Cordaid Rwanda's form of PBF uses a black box approach, meaning that the funding will be allocated by the chief of the health centre in a way he

sees appropriate, salaries, equipments, user fee reductions or drugs.

The third form of PBF are the contracts for hospitals. Quickly it was apparent that the approach used for health centres did not suit hospitals. Hospitals operate using service departments and as such, one should focus on measuring the performance of each department in a way that is specified for them. At the beginning of 2006 Cordaid Rwanda started to contract district hospitals based on indicators set up together with the NGO Management of Health Sciences, MSH. Within hospitals every service has a set of indicators and standards on which they are evaluated. This research report focusses on the contracting of health centres and its influence of it on motivation, management, supervision, utilization rates and budget use.

Experiences in the field, developments in the government's policies and questions of sustainability of the funding of healthcare in Rwanda were at the base of many alterations in the approach of PBF. Over the last 5 years Cordaid Rwanda's focus has been mainly on developing the technique, providing technical assistance and advice and getting the attention of the World bank, WHO and the Rwandan government for the successes in Rwanda. As a result the development-process and proof of the technique is under-documented. Literature describes the measured output on indicators for quantitative aspects of healthcare. Indicators such as utilization rates, percentage of children vaccinated and amount of institutional deliveries. However, the 'black-box' has not yet been opened to see why there are measurable effects in output. Nor has literature been sufficiently able to quantify the added value of PBF on different aspects such as management of health centres being more innovative and creative, increased geographical access to health care and the real increase of financial accessibility. As PBF is still a relative new technology, refining the technique, and making it a more cost-effective approach is still necessary. To achieve these optimizations, the black box needs to be opened and the added value of PBF understood. The optimal balance between activities which receive funding, based on the indicator for such activity, and activities not included in the evaluation tool needs to be found. Experience has learned that too many indicators are not feasible. Being unable to measure all activities, and to find a right balance between quantitative and qualitative performance indicators proves to be a challenge for PBF. With increased knowledge and proofs on the way PBF is affecting performances of health service providers, it might become easier to overcome these challenges.

2.1 Problem definition:

This paragraph covers the challenges, threats and goals for the functioning of the health system. What are the challenges of the current health system and how does PBF deal with these? What are the goals of Rwanda's health system and what are the goals for PBF? These questions are indirectly relevant for the research question. This field study and research project focuses on the technology of PBF, its added value to the health system. To give more relevance to this question it has to be shown that the health system faces challenges in which PBF can contribute.

This comparison study between two districts Nyamasheke, a PBF district, and Musanze, a control district, allows for an improved understanding of the mechanism of Performance Based Funding. The new insights can be used as a basis for further research and evaluation of the technology. The cost-effectiveness of PBF is still a point of discussion, new insights can contribute in the understanding of the effects and be used to adept PBF. PBF is still a technology in development thus enlarging the evidence base on this instrument is still very valuable. In low-income Asia PBF-projects have shown interesting results, contracted provinces in Cambodia outperformed the control districts. Total Family health expenditures per year dropped with 40% from 18\$ to 11\$ and according to patient surveys quality of health care had improved significantly. In contrast of low-income Asia, black Africa has still few experiences with contracting or PBF resulting in a lack of evidence and literature. As a matter of fact, Rwanda is one of the very first countries in Africa to pursue a structured approach to measure quality of healthcare. Experiences from Rwanda are used as an example for other developing countries and large organisations like USAID and the World Bank. This broad interest increases the need for well documented results, a strong evidence base,

full insight in the details of PBF, its Critical Success Factors and the lessons learned.

Challenges: Although significant progress has been made in rebuilding the health system in recent years, the country still deals with severe constraints caused by inadequate infrastructure and equipment, insufficient human resource capacity and a lack of financial resources. These constraints result in inaccessibility of health care and low quality standards of health services. The burden of these challenges on the country is expressed in the foreword of 'health sector policy 2005' by Dr. Jean Damascène NTAWUKULIRYAYO, the Minister of Health of Rwanda. *"Current health indicators reveal the precarious health situation that exists for the majority of Rwandan households, restricting the ability of the population to take part fully in the economic development of the country. The situation is most visible by the large number of the people who fall ill without receiving any medical attention, by the high number of absent days from work, by the large sums of money spent on health care and by the constant funeral ceremonies taking place in the hills. Indicators of children mortality, pregnant mother's mortality are particularly worrying. This situation is worsened by other cross cutting factors related to the poverty in general stigmatized by the low GDP resulting in context proper to accommodate the diseases particularly transmissible diseases, malnutrition and now the AIDS and its spread."*

An extra complication exists in the fact that many doctors and nurses were killed, fled or were guilty in the genocide of 1994 themselves. And those who remained are hesitant to work in remote districts with poor living conditions. *"These realities constitute a genuine barrier to the development at a moment which Rwanda is leaving the emergency period of post war instability and is embarking in an ambitious phase of sustainable development as detailed in its 2020 vision and in its commitments to numerous other international plans of development such as the MDGs, the NEPAD,..."* (Damascène minister of Health, 2005) Performance Based Funding provides an opportunity to deal with the challenges faced by the health system, but does it deal with all of them and how significant is its contribution at this moment?

Goals: In order to achieve the goals set for 2020 by the Rwandan government the Rwandan health system has to become less dependent on foreign aid. Access and quality of health care needs to be improved and sustainable sources of health funding have to be found. A competitive atmosphere among health centres and hospitals will encourage innovative management and make the health system more autonomous. To achieve these goals, health centres will have to increase their performance, financially as well as qualitatively. Creative management strategies will be needed to sensitize the population. Benefits of sensitizing the population are that less new cases of illness occur and the population will have an increased awareness of the advantages of treatment in health institutions. Performance Based Funding stimulates performance and creates a competition for contracts. PBF can contribute as a technology allowing Rwanda to break with the vicious circle of poverty (poverty – illness – poverty).

Threats:

To break with the circle of poverty and achieve the health goals for Rwanda the health system reform needs to address multiple facets. Rwanda has to deal with threats as equity issues, corruption, education, inadequate infrastructure, scarcity of qualified personnel and the lack of sustainable sources of funding. Innovative management and motivated health workers are essential to successfully deal with these threats, how can PBF be of assistance? The phenomenon of 'brain drain' is for developing nations a widespread threat. A brain drain or human capital flight is an emigration of trained and talented individuals ("human capital") to other nations or jurisdictions, due to conflicts, lack of opportunity, health hazards where they are living, or other reasons. It parallels the term "capital flight" which refers to financial capital that is no longer invested in the country where its owner lived and earned it. Investment in higher education is lost when a trained individual leaves and does not return. Rwanda has compared to its surrounding countries, DR Congo and Burundi, quite high salary levels. However, circumstances for living and child raising in

rural provinces are far from encouraging, which makes it difficult to find qualified personnel for these regions. The genocide in Rwanda made the situation more grave as the country lost many educated inhabitants. Of those who could fled many are still hesitant to return to their country while political tensions in a post-war atmosphere still exist. PBF deals with this threat with its, through primes, increased salaries and bonuses for remote districts. Topping salaries with primes might prove to facilitate in finding qualified personnel. In Cyangugu 120 new jobs were created for skilled workers, they could be paid with the newly acquired financial means. The government has been increasing expenditures for health from 1\$ per person per year to 3\$ in 2008. The World Bank has set the baseline for government expenditures at 12.00\$ per person per year. The government has reserved funds to pay for the health micro insurances for the indigents, but still not everyone is implicated in the micro insurances, how can the system reach all of the poor? Ideally PBF deals with these problems as well, corruption is dealt with through the high amount of performance verifications and the strict control, plus a zero tolerance policy on corruption. PBF strives to decentralize Rwanda's health and finance sectors and separate administrative responsibilities from financing responsibilities (provider – purchaser split). The separation of functions and the broader division of responsibilities has a positive impact on the risks of corruption. Encouraging results have led to major grants of the World Bank and other large NGO's are more interested investing in districts which are showing results and engaging in innovative technologies. The system of micro insurances and incentives for utilization allows health centres to increase their income significantly by increasing performance and output. Cost-effectiveness – user fees – utilization allow for a positive spiral, catalysed by PBF's primes. The most difficult and under-documented threats are the equity issues. PBF is supposed to decrease out of pocket health expenditure costs and increase geographical accessibility through sub-contracting of private and small health service providers by the health centres. However, the evidence base for these effects is still small. Participation percentages of the Community Based Micro Insurances are still volatile and insight on PBF's influences on these threats is still meagre.

Research questions:

As stated above, the report will not focus on improving the health system in Rwanda. The assignment is to increase evidence and knowledge on the technology of Performance Based Funding. The field study explores the effects of PBF, its added value and the significance of its impact. To quantify the effects and influences of PBF on the quality of performance of health service providers the following research questions were used. Performance in this context should be defined as the ability of an health centre to reach all social layers in the population, and deliver quality services to all whom are in need of health care.

How does Performance Based Funding of health facilities influence the quality of performance of health service providers?

- 1) Which indicators can be identified to measure the quality of performance?
- 2) How do the performance indicators differ between performance based funded health centres and input based funded health centres?
- 3) Which confounding factors influence a health centre's performance on indicators?
- 4) How does performance based funding influence management of health facilities?

This report aims to provide answers to these questions, but it should be recognized that the interpretation of data will often be slightly subjective as the researcher was restricted in his experience and time. In chapter 3 the set of indicators used to define 'quality performance' will be given. In the further chapters indicators will be dealt with in further detail, data from the visits to both health districts will be provided to 'score the indicators'. The necessity of a quantification of the confounding factors, biasing the real added value of PBF is pertinent. However the question cannot be answered in full dept in one chapter. Alternatively each chapter will deal with possible

biases in the results and estimate its significance. The scientific basis is provided by the comparison of field data. Qualitative observations will be used to determine differences in management styles and its influence on performance of Health Service Providers. Researchers are trying to open the 'black-box' of contracting and PBF, what changes in health centres after the contract? Understanding the true added value of PBF gives an opportunity to optimize the technology so that it can be a more efficient or effective means in achieving development of the health system.

3.0 Methodology

This chapter describes the methods applied to find answers to the research question. The chapter starts with an introduction of the indicators which were used to measure performance and confounding factors. These indicators were at the basis of the interviews and essentially thus at the basis of the research. As the researcher had no experience in developing countries nor with field studies or questionnaires, an indication of difficulties will be given. The chapter serves to place the results and findings in a proper context, methodology, experience and interpretation have great influences on the outcome of a field study.

For Cordaid, the government and other NGO's their main interest is getting a better insight in how PBF is affecting performance in health centres. Secondary goals are to compare the added value of the technology with its costs and identifying problems for further research. The relevance of the research question is trivial, the answer complicated. *'How does Performance Based Funding of health facilities influence the quality of performance of the facility?'* to find an answer to this question a set of indicators for quality performance of a health centre had to be created. First I had to find an appropriate definition for **Performance Based Funding**, as it is more than just 'contracting' to buy quantity and quality. PBF is a fundamental part of the health system reform. To get a detailed insight in the influences of PBF on health centre performance I split PBF in two parts and determined the theoretical effects of the two parts. The next step was to create a set of indicators to quantify each effect. To determine the added value of PBF I've designed interviews and questionnaires for two districts, a control district Musanze and a PBF district Nyamasheke. To get a feeling for the differences between western health service providers and African hospitals and health centres I've visited a district hospital and HC in Kibogora, Nyamasheke. These visits were not included in the research sample. I've spent three weeks visiting health centres in each district to get the necessary data.

Theoretical effects of The contract:

- I Increased motivation of personnel
- II More creative and innovative management
- III Integration of services
- IV Increased access to financial resources
- V Improved quality of services (due to investments in equipment, personnel and patient-relations)
- VI Increased utilization of services (money follows the patient -> awareness programs)

Theoretical effects of supervision & verification:

- I Training of the health centres through supervision and feedback on errors. (trial & error)
- II Improved administration -> more data is registered and collected.
- III Accountability and transparency of results.
- IV Increased access to knowledge through technical supervision and training.
- V Increased responsibility for results -> pressure to do a good job.
- VI Increased awareness of bottlenecks and priority of problems.

3.0.1 The research sample

To do the comparison studies on the indicators for control districts and PBF districts, I've selected a sample of health centres to visit. Budget and time limitations put restrictions on the size of the research sample. Another restriction was the availability of transportation. Rwanda's rural area's can be very hard to reach and most of the time there is no public transport available to the health centres. Therefore I had to take into account the accessibility of the district during the selection. In the context of these restrictions and the assurance of my coordinator that 8 health centres would give a good perspective on the situation in a certain district, I've decided to take 2 districts for comparison. Rwanda has 8 official 'control districts', those districts receive the same amount of primes each trimester as the PBF districts, but on an input basis. From these control districts Musanze is the most accessible district, plus Cordaid Rwanda has good contacts with the mayor of the health district, Deo Nbanda. This relationship made it easy to get authorization to visit the health centres. The choice for Musanze as control province was based on the fact that transportation is relatively easy to find and officially it is an input 'control district'. The district is supposed to receive the same amount of trimestrial primes from the government. In Nyamasheke Performance Based Funding has been introduced in 2002 and since then the district, part of the former province of Cyangugu, has been cooperating with Cordaid . Cordaid Rwanda has invested in the existing structures of administration and technical supervision. At the moment Nyamasheke serves as a role model for the implementation of Performance Based Funding in Rwanda, especially for the West-Province. One of the effects of this attention is that the health centres are more used to external supervision plus their results are followed with great interest by NGO's, the government and even the World Bank.

The district of Nyamasheke has a total of 13 health centres, Musanze has 11 centres. In both districts I've visited 8 health centres, which is 62% of all HC's in Nyamasheke and 73% of all HC's in Musanze.

Indicators	Nyamasheke	Musanze	Difference	Total
Total number of HC's visited	8	8	0,0%	16
Amount of public HC's	3	3	0,0%	6
Amount of interviews	8	8	0,0%	16
HC chiefs available for interviewing	5	3	66,7%	8
Number of enquêtes	30	29	3,4%	59

3.0.2 Preparation and difficulties

By studying the theory behind PBF, and analyzing its potential influence on different facets of health care I've been able to define relevant indicators for performance. This analyses was mainly based on literature studies on experiences with contracting and funding of health care in developing countries. During this literature study the greatest constraint was the lack of literature on studies done by independent experts on experiences with Performance based funding. In certain articles it was very obvious that the author was subjective and lacking criticism in explanations, generalizations and conclusions. Often overlooking important confounding factors such as the overhead costs, inflation, hard currency changes over the years and the impact of other health reforms such as micro insurances. Information about the health system, the administrative system, the context and the technology of PBF came mainly from literature. However, interviews and discussions with experts, friends and colleagues contributed heavily in the process of understanding. For the preparation of the questionnaires I've used my experience from the literature and the visits to the health centre and district hospital in Kibogora. Before going into the field I've asked Jean Baptiste, an experienced team member of Cordaid Rwanda who has done several studies on public health in Rwanda, to advice me on the proper formulation of questions. It

was tough to formulate questions in such a way that they are not 'too difficult' or too obvious. Jean Baptiste warned me that HC staff will try to fill in the 'right' answer rather than their honest opinion. Trying to avoid such biases was not easy, and the field experience proved that it was indeed difficult to get the 'real' answers. Common difficulties I encountered were incomplete questionnaires, some questions proved to be hard to understand and often the 'easy' answer was preferred over a more lengthy response. Not in every HC I was able to find 4 qualified staff members able to speak and write French and in several cases it was clear that French caused a language barrier as it not the Rwandans' mother tongue. Another bias was that despite, I had asked the nurses to answer the questionnaires individually, it was evident that there had been collaboration influencing results.

For the interviews the greatest constraint was the 'timing' of the visits, due to the mobility restrictions I was unable to come back at a later point to meet with the health centre chiefs if they happened to be unavailable at the moment of my visit. In those situations I did the interview with the vice-chief of the HC. Though the information retrieved from vice-chiefs was significantly less rich. The vice-chiefs were often able to answer the questions but less qualitative information could be won and answers were often less informative than health centre chiefs. In a few cases the interview was troublesome and cooperation of the health centre chief was minimal. Explaining questions to respondents can certainly influence the answers, making it difficult to find the right balance between 'guiding' the interview and biasing answers. By doing the interviews, I got more familiar with the system, the bottlenecks as perceived by health centre chiefs, common terminology and the language. This caused me to 'grow' into the research and made me able to ask more relevant questions. Unfortunately this knowledge made me aware of information I should have gathered in the first interviews already. In my recommendations I will advice on points of interest which can be investigated in further research.

3.1 The indicators

This paragraph covers the theoretical effects of PBF. For each effect I've chosen a set of indicators and influencing circumstances. Performances difference for these indicators between the control district and the PBF district allow to quantify the added value of performance based funding. The two columns next to the indicator provide information on how the data can be found. Based upon this set up I've created the questions for the interviews and questionnaires. However I've been unable to address all sources, as during the preparation phase I was still unaware of certain indicators, its importance or the source. I will provide recommendations on which data should be gathered for further research.

The first part covers the indicators for the effects of the 'contract' between the purchaser and provider of health services. The second part covers the effects of regular supervision, quality assurance and the availability of technical assistance.

3.1.1 Part 1, the contract

– I. Motivation:

Indicator	Source of information	How to measure?
Punctuality of staff	Health center chief	Interview
Devotion of staff	Health center chief	Interview
Reception of patients	Patients	CBO questionnaires
Patient centered way of working	Patient satisfaction	CBO questionnaires

Related circumstances	Source of information	How to measure?
Sufficient salaries	Staff	Questionnaires
Enough materials to do a good job	Staff & Health center chief	Interview & questionnaires
Participation in decisions	Staff & Health center chief	Interview & questionnaires
Access to training and assistance	Staff	Questionnaires

– II. Innovative management:

Related circumstances	Source of information	How to measure?
How often are reunions	Health center chief	Interview
How often is the inventory done	Staff & Health center chief	Interview & questionnaires
How is staff instructed	Health center chief	Interview & observation
Which are the bottlenecks	Health center chief & staff	Interview & questionnaires

– III. Integration of services:

Indicator	Source of information	How to measure?
Multiple services are given upon visit	Health center chief	Interview
Patients are advised to use other services	Health center chief & staff	Interview & questionnaires
Sensitizing programs	Health center chief	Interview

Related circumstances	Source of information	How to measure?
Promotion of services	Health center chief	Interview
Instructions for personnel	Staff & Health center chief	Interview & questionnaires
Increased utilization rates	Health center chief	Interview & observation

– IV. Increased access to financial resources:

Indicator	Source of information	How to measure?
Amount of incentives awarded	Health center chief	Interview
Salary levels	Health center chief & staff	Interview & questionnaires
Sufficient equipment	HC chief & staff	Interview & questionnaires
Percentage of budget used for salaries	Rapport SIS	Check
Constraints based on financial means	HC staff & chief	Interview & questionnaires

Related circumstances	Source of information	How to measure?
Increased utilization of services	Rapports & statistics	Calculation
Percentage of staff paid by the state	Staff & Health center chief	Interview & questionnaires
External donors & international programs	Health district mayor	Interview
Government per capita spending on health	Ministry of Health	Check

- V. Improved quality of services:

Indicator	Source of information	How to measure?
Increase in quality score of HC	Health center chief	Interview
Patient satisfaction	Patients	CBO questionnaires
Sufficient equipment	HC chief & staff	Checking the budget
Availability of water & electricity	HC chief & staff	Observation & interview
Percentage of patients referred	District hospital chief	Interview

Related circumstances	Source of information	How to measure?
Number of qualified employees per inhabitant	Health center chief	Interview & check
Training for personnel	Staff	Questionnaires
Improved competence due to supervision	Staff	Questionnaires
Access to technical assistance	Staff	Questionnaires
Regular external supervision	Staff	Questionnaires

- VI. Increased utilization of services

Indicator	Source of information	How to measure?
New patients treated monthly in Curative consultation	Rapport SIS	Check
Increase in incentives rewarded	Cordaid Rwanda	Check
Amount of budget spent on medicaments	Rapport SIS	Check
Decrease in cost of services for patients	Cordaid Rwanda	Check

Related circumstances	Source of information	How to measure?
Percentage of population implicated in Micro insurances	HC chief & HD mayor	Interview
Amount of qualified personnel per inhabitant	Health center chief	Observation & interview
Strategies used to sensitize population	Health center chief	Interview
Strategies used to reach the population	Health center chief	Interview
Multiple services are given upon visit	Health center chief	Interview
Promotion of services	Health center chief	Interview
Patient satisfaction	Patients	CBO questionnaires

3.1.2. Part 2, Supervision and Technical Assistance

The increased responsibility of the district hospital and the technical assistance of a experts in Nyamasheke should in theory offer health centres multiple opportunities to improve their performances and forces them to increase transparency and accountability of their administration. The visits, the verifications and the on-site trainings are perceived as costly aspects of PBF. Therefore it is useful to quantify its added value.

- I. Training through supervision & feedback:

Indicator	Source of information	How to measure?
Regular internal supervision	Staff	Questionnaires
Regular external supervision	Staff	Questionnaires
Feedback after supervision	Staff	Questionnaires
Improved competence due to supervision	Health center chief	Interview
Training for personnel	Health center chief & staff	Interview & questionnaires

Related circumstances	Source of information	How to measure?
How often are reunions	Health center chief	Interview
Access to technical assistance	Staff	Questionnaires
How is staff instructed	Health center chief	Interview & observation

– II. Improved administration:

Indicator	Source of information	How to measure?
Evaluation of performance	HC chief & Supervisors	Interview & observation
Correct data in books	Administration	Verification
Complete information in reports	Administration	Verification
Regular reports	Health center chief	Interview
Use of HMIS	Mayor of HD & HC chief	Verification & interview

Related circumstances	Source of information	How to measure?
Accessibility of reports and statistics	Reports & graphics	Observation
Regularity of inventory checks	Staff	Questionnaires

– III. Accountability and transparency

Indicator	Source of information	How to measure?
Percentage unconfirmed patients	Patients	CBO organised checks
Accessibility of reports and statistics	Reports & graphics	Observation
Correct data in books	Administration	Verification
Complete information in reports	Administration	Verification

Related circumstances	Source of information	How to measure?
Number of people implicated in management	Health center chief & staff	Interview & questionnaires
Good comptabilité service	Health center chief	Interview
Written reports	Archive & HC chief	Observation & interview
Use of HMIS	Mayor of HD & HC chief	Verification & interview

– IV Increased access to knowledge

Indicator	Source of information	How to measure?
Access to technical assistance	Staff	Questionnaires
Improved competence due to supervision	Staff	Questionnaires
Feedback after supervision	Staff	Questionnaires
Training for personnel	Health center chief & staff	Interview & questionnaires

Related circumstances	Source of information	How to measure?
How often are reunions	Health center chief	Interview
How often is the inventory done	Staff & Health center chief	Interview & questionnaires
Regular internal supervision	Staff	Questionnaires
Regular external supervision	Staff	Questionnaires

– V Increased responsibility for performance

Indicator	Source of information	How to measure?
Awareness of items of supervision	Staff	Questionnaires
Participation in decisions	Staff	Questionnaires
Patient satisfaction	Patients	CBO questionnaires

Related circumstances	Source of information	How to measure?
Improved competence due to supervision	Staff	Questionnaires
Motivation	Staff	Questionnaires
Regular internal supervision	Staff	Questionnaires
Regular external supervision	Staff	Questionnaires

– VI Increased awareness of bottlenecks

Indicator	Source of information	How to measure?
Inventories are done regularly	Staff	Questionnaires
Bottlenecks identified by HC chiefs	Health center chief	Comparison
Bottlenecks identified by Staff	Staff & Observation	Comparison
Regular internal supervision	Staff	Questionnaires
Regular external supervision	Staff	Questionnaires
Performance evaluated regularly	HC chief & reports	Check graphics & interview

Related circumstances	Source of information	How to measure?
How often are reunions with other HC's	Health center chief	Interview
Does the state show affection?	Staff & Health center chief	Interview & questionnaires
Feedback on supervision	Staff	Questionnaires

3.2 PBF accuracy risks

An small but important part when evaluating the added value of performance based funding is evaluating the threats for the accuracy of data as well. In Chapter 8 further details will be given on the exact indicators used, this section covers mainly the method used to understand the risk of certain flaws in the measured output of health centres. Despite the fact that this report does not reflect on output performance of health centres, for further research it is interesting to get an insight in the impact of confounding factors. The risks for comparison studies based on the output of health centres are:

- A.) Inflated records for the remunerated activities in PBF health centres.
- B.) Negative effects to activities which are not remunerated, items not implicated in the performance indicators risk being neglected in favour of remunerate activities.
- C.) The quality of activities is neglected in favour of quantity.
- D.) Health centres might deliver the remunerated activities in spite of insufficient capacity, causing health risks such as poor diagnosis or incomplete services and treatment.

The source for the seriousness for these threats lies with the ethics and management of the health centre, which is why these subjects are interesting for this research. If health centres deal recognise the threats and deal with these adequately it supports their quality of performance.

To gather the necessary information to come to answers, in the same interviews with health centre chiefs and in the questionnaires with personnel questions could be asked and observations could be made. Insight in the services which are remunerated and which are not provides the opportunity to compare these with the bottlenecks identified for each service. An important part of the methodology is thus gathering information on the bottlenecks as well. Which service is more likely

to suffer from disadvantages for not being remunerated and which service is being overcharged with work? These services offer the best opportunity for further research to investigate to which extend risks do exist. Gathering on the correct information for A and D has been relatively easy, however risk C and B are not easily evaluated. Observations of the general circumstances, general attitude of staff and the reactions of respondents can be used to explore the risks, but clear answers are not possible for the moment. In measuring capacity constraints it proved to be tough to get objective answers. Respondents are either really proud of their work and try to hide the flaws, or they are really negative in order to win attention for their issues. It has been a challenge to deal with these circumstances.

4.0 General Characteristics of the districts

In this chapter an introduction of the districts involved in the research will be given. A general set of differences and similarities in population, number of employees, utilization rates, incentive levels and characteristics of the samples are provided. The choice for Musanze and Nyamasheke as objects of the field study is explained in chapter 3.0.1. Musanze and Nyamasheke are both rural districts, both with a population around 200 000 inhabitants and only 1 or 2 small cities. The health centres in Nyamasheke are engaged in Performance Based Funding since the beginning of 2003, nowadays their experiences are used as international examples. Health centres in Musanze are not used to contracts nor to regular supervisions. The district hospitals are in all districts responsible for the quality in health centres within their target zone. However, these quality assurance programs are not on regular basis in Musanze. Nyamasheke is located in the South-West of Rwanda, next to Lake Kivu, on a very hilly landscape. Roads are compared to Musanze quite good, all of the health centres were easily accessible by car. Musanze is the district around the city of Musanze in the north of Rwanda. Rwanda's volcanoes and Mountain Gorilla's are in this district, which makes the city of Musanze larger and more touristic than the city of Cyangugu in Nyamasheke. The district hospital in Musanze has a few excellent ex-pat doctors. The quality standards of the district hospital are famous and in the near future the status of the hospital will be upgraded to a referral hospital. Musanze has few roads, many roads to the villages are dirt roads through banana plantations, but the roads which are in place are excellent. The route to the volcanoes is completely asphalted, and villages close to the big roads are easily accessible. However, 5 of the health centres visited in Musanze were very hard to reach by motorbike, bumpy and steep dirt roads close to the volcanoes were really tough during the rain. The proximity of the volcanoes and the lakes near Musanze causes it to be the wettest district in Rwanda. An extra constraint to accessibility of the health centres is the fact that in Musanze there are few private dispensaries and the number of health centres per inhabitant is smaller.

Unfortunately it appeared impossible to find 4 staff members in every health centre, which has resulted in a little sample inequity. In Musanze 29 health workers participated in the questionnaires while in Nyamasheke 30 respondents were found. An other minor inequity comes from the fact that not all health centre chiefs were available. Due to Cordaid Rwanda's close contacts with the HC's in Nyamasheke it was very easy to arrange appointments in advance. In Nyamasheke 5 HC chiefs (out of 8 HC's) were interviewed. In Musanze making appointments proved to be more difficult, resulting in the availability of only 3 HC chiefs. In cases where the chief was not present the interview was held with the vice-chief. By the time Musanze was visited, significantly increased experience allowed for a more accurate gathering of relevant information. Statistics in this report will mainly be based on percentages of respondents rather than on absolute numbers. In Rwanda health centres are either public or run by the church. Health centres run by the church differ from public health centres in the services they offer and the general level of motivation. A complication in identifying if a HC is public occurred in the fact that health centre chiefs and personnel often said they are both public and linked with the church. Most of the Rwandans are Christian and as a result

they feel their HC is religious as well. Because of this bias the topic will only get a short introduction. In general church-run HC's refuse to provide unnatural family planning services (injectables and operations) and HIV consultancies. However, their personnel is said to be more motivated. This due to the fact that the church has an ideology and does not want to lose 'customers'. These HC's have stricter internal supervision and access to funds from the church. It cannot be said with certainty, but for what it is worth, in both districts 5 out of 8 HC's claimed their health centre to be under the responsibility of the church.

Indicators	Nyamasheke	Musanze	Difference	Total
Total number of HC's visited	8	8	0,0%	16
Amount of public HC's	3	3	0,0%	6
Amount of interviews	8	8	0,0%	16
HC chiefs available for interviewing	5	3	66,7%	8
Number of enquêtes	30	29	3,4%	59

The first interesting difference between the respondents of the two districts can be found in the period they are employed by the health centre. On average the respondents in Musanze were working for the HC 1,6 times longer than the respondents in Nyamasheke. This difference can point at a more rapid increase of staff size in Nyamasheke. Alternatively it could also be an indicator for stricter demands on qualification and motivation of personnel in Nyamasheke, resulting in a higher rotation rate of personnel.

Indicators	Nyamasheke	Musanze	Difference	Total
Average time employed (years)	2,6	4,1	-37,2%	3,3
% of respondents functioning as Infirmiers (A2)	73,3%	69,0%	6,3%	71,2%
% of non qualified respondents	3,3%	3,4%	-3,3%	3,39%

The health district determines every year the zone of influence for a health centre. The 8 health centres visited in Musanze have a cumulative target population of 257.733 inhabitants. The HC's visited in Nyamasheke are responsible for 185 393 people, 28% less than in Musanze. However, in Musanze less health workers were employed. The table below shows how the number of employees is in each district and what the average number of inhabitants per employee is. The difference between both districts are significant, 50% more qualified health workers are operate in Nyamasheke, the PBF district. In Musanze the number of inhabitants per qualified health worker is more than twice as high compared to Nyamasheke. These figures are closely related to the utilization rates and quality of services. The higher the number of inhabitants per health worker, the more like it is that employees are overcharged with work. Capacity constraints in weekends or during absence of employees are much more likely to occur in Musanze. With more qualified health workers available it is equally likely that patients can be treated quicker and more effective resulting in a higher perceived quality by patients.

Indicator	Nyamasheke	Musanze	Difference	Total
Total Target population	185.393	257.733	-28,1%	443.126
Total number of employees	198	141	40,4%	339
Inhabitants / Employee	936	1.828	-48,8%	2.764
Number of qualified employees	134	89	50,6%	223
Inhabitants / qualified Employee	1.384	2.896	-52,2%	1.987

The differences in staff can be explained by several causes. Differences in salary levels could cause it to be less attractive to work in Musanze. Which could be explained by differences in government influences. In Rwanda nurses can get a contract with the state, which offers a relatively high salary (~130€ per month) or their salaries are paid by the health centre. In the last case the health centre decides which percentage of their budget is used for salaries, for some health centres this is a better salary than with the state, but for most employees it is significantly less. Apart from the salaries differences in personnel can be caused by strong management of an HC. Creative strategies can be

used to attract and recruit new qualified personnel. Differences in financial resources for health centres putting constraints on the maximum affordable staff size. Either of these explanations could be related to the use of Performance Based Funding.

Before visiting the district of Musanze the impression was raised that Musanze would be a close-to perfect control district, receiving the same amount of money as the PBF districts. However, upon further investigation it appeared that the awarding of primes in Musanze happens to be unstructured and unequal. It is not clear how the primes for each HC's are set and HC chiefs have conflicting thoughts on their role as control district. Primes for a HC in Musanze are not often paid in time, and the HC's are obligated to use the primes as a salary bonus. Effectively it does not increase the income of health centres, it merely gives a bonus to the salaries. During the field study it became apparent that the primes for health centres given in Musanze and Nyamasheke were not equal. The 'control' function of the province of Musanze relies on the similarity in financial resources without the rules and expectations of a performance contract. The health centres in the sample of Nyamasheke received on average 1.300.000 Francs every three months. With 1 Euro being worth 720 FRW, 1.300.000 FRW is approximately 1800€. 132% more than the health centres in the sample of Musanze. On average the health centres in Musanze received 775€ every three months. This difference strongly biases the 'control' aspect for the district of Musanze as it causes relatively large differences in monthly incomes of health centres. To give an indication of the monthly budgets, in Musanze the health centres spend on average 1.367.034 Franc, ~1900€. Despite the fact that the data for Nyamasheke is crude and less accurate, all indicates higher monthly expenditures compared to Musanze. Based on the available information HC's in Nyamasheke spend monthly 3.500.000Fr, ~ 4860 Euro's. From comments between the lines it became apparent that the primes received in Musanze were all used for the salaries and primes for salaries. The primes received in Nyamasheke were spent on a 60/40 basis, 60% of the primes are spend on the functioning of the health centre, 40% is spend on the bonuses for employees. This difference in spending pattern would explain the higher primes for employees in Musanze while less money is received. The differences in available cash resources strongly biases the comparability of the districts. The HC's in Nyamasheke receive more than double the primes for Musanze, of this money they are able to spend 60% to the functioning of the health centre, dealing with bottlenecks and constraints. Resulting in higher capabilities to reach and treat the population. Comparability is reduced due to the unequal financial circumstances, however the inequalities might have their roots in strong performance of HC's in Nyamasheke. The primes for the control district of Musanze were set at the beginning of 2006 and might have been based on performances of other PBF districts than Nyamasheke, indicating that the approach of PBF in Nyamasheke has lead to elevated performance over other PBF districts. The fact that HC's in Nyamasheke invest 60% of their primes in the functioning of the HC might have resulted in an exponential increase in performance, access to cash -> less capacity constraints -> more patients -> increased financial resources -> investments in the HC -> increased performance.

Indicator	Nyamasheke	Musanze	Difference
Average Prime for HC per trimester	1.300.000 F	560.000 F	132,1%
Percentage of HC with sub contracted dispensaries	50,00%	0,00%	n.a.
Total number of employees in sample	198	141	40,4%
Total target population in sample	185.393	257.733	-28,1%
Average prime per inhabitant	7,01 F	2,17 F	222,7%
Average prime per employee	6.566 F	3.972 F	65,3%

4.1 Utilization of health services

Every year the Ministry of Health sets the target population for each district. The Health Districts distribute responsibilities for health centres and target populations among the District Hospitals. Each Health centre is supervised by a District Hospital and held responsible for a target population. Based on this target population, other targets are set for each HC. Goals are set for each service, but the targets for vaccinations, and the monthly treated number of patients at the curative consultation are the most important targets. The percentage vaccinated children is used as an indicator for the abilities of HC's to reach the population. The number of patients treated in the curative consultation is frequently used as an indicator for utilization rates of an HC. When a new patient comes to a health centre he is sent to the curative consultation for diagnoses, dentistry services and other minor services are provided by the curative consultation. Assumed that the nature of illness and the occurrences of illness per person per year is the same for two different populations the number of patients treated can give an indication of the accessibility of an health centre. This can be illustrated with an example, a health centre treats 2000 new patients at the curative consultation every month. If the HC has a target population of 25 000 patients, on average every month 8% of the population is visiting the health centre for services. A monthly based figure is more accurate than a year's statistic, if we would multiply the 2000 by 12 and say that 96% of the population is using the health centre, we will count a certain number of 'new patients' double and risk that confounding factors such as the average cases of illness per person will have a larger effect. In this report the utilization will thus be a 'relative' figure. Assumed that in both districts the same proportion of total patients visits the curative consultation.

District	Target population of HC	Average monthly consultations	Utilization rate
Nyamasheke	185.393	16.880	9,10%
Musanze	257.733	11.450	4,44%

In Nyamasheke the average utilization rate is 9,10%. In the health centre of Muyange the lowest utilization of Nyamasheke could be registered, 6,67%. Kamonyi treats on average every month 2700 patients at the curative consultation, on a target population of 19.722 this represents a utilization rate of 13,69% which is the highest rate in Nyamasheke. In Musanze utilization levels are on average significantly lower, 48% lower than in Nyamasheke. Musanze's health centre with the lowest utilization rate treated on average 600 patients per month in 2007. With a target population of 31.003 people this indicates a utilization of 1,96%, more than three times lower than Nyamasheke's lowest utilization rate. During the visits in Musanze, the health centre of Muhoza made the best impression, the team made an organized impression and it could be noted that the proximity to the district hospital and good roads caused good circumstances. In line with expectations Muhoza scored utilization rate of 6,22%, the best rate of the health centres visited in Musanze. The HC of Muhoza treated 4800 patients in February 2007, of a target population of 77.140 people. The relatively high utilization of Muhoze is with 6,22% still lower than the lowest score in Nyamasheke.

4.1.2 Differences in utilization in detail

In the list of indicators given in chapter 3, an expectation of utilization is formulated. Health centres which receive their funding based on performance will draw more patients to their services and thus increase utilization rates. Health centres are rewarded based on the amount of patients treated, the quantitative aspects of service delivery, it can be expected that health centre managers come with strategies to increase the utilization levels. However, the utilization rates of health centres relies on many factors. The number of indigents, geographical accessibility, user fees, capacity of the health centre (weekend shifts), economical aspects of the district, ambulance or means of transportation available, awareness of the population and cultural aspects. In Rwanda still many

people rely on traditional healers and traditional medicaments. The approach of PBF does not directly target these aspects, the health centre chiefs are free to create their strategies to increase utilization rates. This report has a more general character and therefore does not specialize in utilization rates, instead the comparison between the two districts is meant to encourage further research. Utilization rates nevertheless tell are relatively easy to compare and tell a lot about the accessibility of HC's, the performance of an HC and possibly about the effects of PBF. The next section will thus give a more detailed comparison between Nyamasheke and Musanze, quantifying four indicators for utilization rates.

In chapter 3 four indicators for an increased utilization rate are defined.

Indicator	Source of information	How to measure?
New patients treated monthly in Curative consultation	Rapport SIS	Check
Increase in incentives rewarded	Cordaid Rwanda	Check
Amount of budget spent on medicaments	Rapport SIS	Check
Decrease in cost of services for patients	Cordaid Rwanda	Check

The four indicators allow for a three dimensional perspective on differences in utilization rates. Patients treated is a crude number, raw and intuitive. The development of incentives rewarded for consultancy services gives information on the progress of utilization rates over time. The third indicator, the budget used for medicaments, allows for a comparison of the more elementary diseases and excludes possible capacity restrictions. The decrease in cost of services for patients, the fourth indicator, is a more abstract and indirect indicator. It contributes to a three dimensional perspective because it offers an insight in two closely related subjects, financial accessibility for patients and cost-efficiency for a health centre. When a health centre can handle more patients for a certain service and they are capable to increase cost-efficiency through higher number of patients, the health centre might consider a reduction in price for services. Paragraph 4.1 shows that the differences for the number of patients treated at the Curative Consultation is significant, but does not touch on the 'baseline' aspects, perhaps historically seen utilization rates in Nyamasheke are elevated. The second indicator, increase in rewarded incentives for the health centres in Nyamasheke gives an indication of the evolution of utilization rates over time. In Nyamasheke citizens could have access to better infrastructure, are less ignorant or are ill more often due to differences in climate. Since 2002 Cordaid Rwanda has been rewarding the health centres with incentives for the quantitative aspects of services. In 2003 the former province of Cyangugu, (Nyamasheke has been part of Cyangugu), counted 612.200. Over the year of 2003 207.958 external consultations were given. In 2005 the former province of Cyangugu counted 632.179 inhabitants, an increase of 3%. However, in 2005 467.336 patients were treated at the curative consultation, an increase of 124%.

Nyamasheke indicators	2003	2004	2005
Population	612.200	627.904	632.179
External consultancies per year	207.958	340.357	467.336
Incentives rewarded for consultancies	€ 52.767	€ 77.460	€ 100.586
Consultancies / Inhabitant	0,34	0,54	0,74

Similar statistics for the District of Musanze were not available during this field study, which makes a comparison impossible. However, it would be invaluable to learn whether utilization rates in Musanze increased in the same proportion. As increase due to economic growth and the introduction of Community Based Micro Insurances could be quantified. The ministry of health has set a framework of strategies to sensitize the population and several programs to reach the

abandoned, and indigents were started. In 2004 the 'mutuelles', CBMI's, were introduced which have halved the costs of health services. Such factors influence utilization rates and contributed to the fact that utilization rates more than doubled in 3 years.

The third indicator for utilization rates are the budgets used for medicaments. Unfortunately the value of this question became apparent late in the field study. In first instance the budget was checked to see the proportion of salaries versus the investments in equipment and maintenance. Progressive insight showed that the largest part of the budget was used for medicaments, absolute figures were collected only for the last health centres. Money spent on medicaments gives an insight in more elementary diseases compared to the number of patients treated at the consultation. The medicaments sold are less dependent on capacity restrictions such as the available personnel plus it excludes the integrated services, medicaments sold is not a remunerated service and as such it is less likely to be an 'inflated' record.

Indicators	Nyamasheke	Musanze	Difference	Average
Salaries & primes	€ 1.463,3	€ 412,6	254,6%	€ 937,9
Equipment	€ 1.103,1	€ 169,9	549,4%	€ 636,5
Maintenance	€ 381,4	€ 48,8	681,9%	€ 215,1
Medicaments	€ 2.012,4	€ 1.024,4	96,4%	€ 1.518,4
Other	€ 0,0	€ 243,4	0,0%	€ 121,7
Average total monthly expenditures	€ 4.960,2	€ 1.899,0	161,2%	€ 3.429,6

Indicators	Nyamasheke	Musanze	Difference
Percentage for medicaments	42,6%	53,27%	-20,1%
Percentage for salaries	31,0%	22,10%	40,3%
Percentage for investments in materials	23,5%	12,60%	86,5%
Percentage for maintenance	8,3%	2,43%	239,5%
Average Prime for HC per trimester	1.300.000 F	560.000 F	132,1%

The tables above contain crude data, the percentages are accurate averages, however the absolute expenditures of each HC were not available for each HC and as such the absolute numbers might be off a little. Despite the little flaws in accuracy of the data, it is obvious that in Nyamasheke more than twice the amount of medicaments are bought compared to Musanze, 106,3% more to be exact. This figure strengthens the statement of the 'patients treated' based average utilization rate in Nyamasheke, 9,1% over 4,44% in Musanze, which is +105%. The last indicator for increased utilization is the cost of services, the data is gathered in the questionnaires held by the CBO's in Nyamasheke.

Average cost of service	2003	2004	2005	2006
Institutional delivery	€ 2,00	€ 2,20	€ 1,40	€ 0,50
External consultation	€ 1,90	€ 0,90	€ 0,70	€ 0,50

(2003 1€ : 650FR, 2004 1€ : 700Fr, 2005 1€ : 700fr, 2006 1€ : 700 Fr)

The table shows that out of pocket costs for deliveries and external consultations dropped to nearly 25% of its original price level within four years. The introduction of the CBMI's 'mutuelles' contributes to this price drop, the micro insurances were introduced mid 2005. Before the introduction of the insurances prices had dropped already. Unfortunately these figures are only available for Nyamasheke so a comparison with Musanze cannot be made. For further research it

would be interesting to compare how costs of services evolved for both districts since 2003. This would filter out confounding factors such as national policies, international donations and development programs. The drop in costs for services supports the theory that health centres started to focus more on the patient (money follows the patient) and lowered costs to increase their use of services. It supports as well the theory that due to a higher number of patients treated economies of scale and cost efficiency could be achieved, productivity has increased.

4.1.3. Related circumstances affecting utilization rates

The score on the four indicators show significant differences in utilization rates, it appears that the initial comparison of utilization rates based on the amount of external consultations can be trusted to be a good estimation of the differences in utilization rates of the health centres. This section probes the related circumstances which can affect utilization rates. In chapter 3 for a set of factors was given which influence the scores on the utilization indicator. The percentage of the population which is implicated in micro insurances, the number of personnel per inhabitant, the strategies used to sensitize the population, active integration of services, promotion of services and the patient satisfaction influence the number of people treated in a health centre.

Micro insurances

During the field study the importance of the implication rates in the micro insurances became apparent. Citizens take a micro insurance for the whole family for one year, after each year the membership has to be renewed. The visits of the health centres took place in February and March of 2007, at the beginning of the new year. In Nyamasheke the chiefs of health centres did not mention how the utilization rates at the beginning of 2007 differed from the utilization rates at the end of 2006. But in Musanze in 4 health centres was mentioned that the utilization rates were 'still low' because of the fact that still many families had not renewed their membership of micro insurances. These remarks caused to ask further information, unfortunately gathering similar data for Nyamasheke was no longer possible late at this point. In Musanze health centre chiefs reported an average implication rate of 70% for December 2006, for March 2007 the average implication for the visited health centres was 36,4%. The implication rate for the Mutuelle for the new year was still at only 52% of its original level. In Nyamasheke the implication rate for December 2006 was around 80% and for March 2007 it can be estimated around 65%. An example of this difference was given by the chief of the Shingiro health centre, she mentioned that in December 2006 her health centre treated 600 patients at the external consultation, 65% of the target population was at that point implicated in a community based micro insurance. In February 2007 the health centre had treated 350 patients and only 24% of the target population was member of a micro insurance. In this example the lower participation rate caused a decline in patients of 40%, showing a strong relationship between the insurance participation rate and the health centre utilization rate.. The relationship between membership of insurance and utilization is further strengthened by the estimations of health centre chiefs in Musanze. On average the chiefs estimate that 80% of the patients who have been treated by the health centre are implicated in micro insurances. This could point at two things, either the financial resources have not been found or addressed yet (harvests, savings, national funds) or people wait for the occurrence of illness before they renew their membership. The last reason is less likely as membership of the micro insurance is officially obligated. It would be interesting to see results of a more detailed research to the effects of insurances on utilization rates and how health centres can stimulate participation to increase their own performance.

Other related circumstances

Besides the financial accessibility of health services, the capacity of health centres to treat the patients and the capacity to reach and sensitize the population are influencing the utilization rates. Patient satisfaction is an important factor as well, if the population trusts the health system and if they are satisfied with the services they receive, they will less likely return to traditional healing methods. The significant differences in utilization rates can point at differences in the population as

well as in how the population is influenced. The team of animators for a HC can be operating more effectively, patients might be more remote to health centres or unaware of health centre services. Health centre chiefs can apply different strategies to sensitize the population, or apply the same strategies as in the control districts with more devotion. An innovative manager and motivated team of health workers can succeed in creating the right circumstances for better utilization rates.

4.2 overview

To conclude this section an overview will be given of the general conclusions which can be drawn from the initial comparison between Musanze and Nyamasheke.

The health centres in Nyamasheke are responsible for a smaller group of citizens than in Musanze. Despite this given, health centres in Nyamasheke treat 16.870 patients at the external consultation, compared to 11.340 patients treated by health centres in Musanze. All four indicators for utilization show that utilization rates in Nyamasheke more than doubled over the period 2003 – 2006. Musanze has significantly lower utilization rates.

Economically seen suffer the health centres in Nyamasheke from less restrictions than the health centres in Musanze. Monthly expenditures in Nyamasheke are 2,5 times higher than in Musanze and 2,3 times more incentives are received by HC's in Nyamasheke. The primes in Musanze are used for 100% to top-up salaries while in Nyamasheke 60% of the primes are used for investments in the functioning of health centres. In the health centres visited in Nyamasheke, 40% more personnel is employed while the number of qualified employees in Nyamasheke is even 50% higher than in Musanze. The number of inhabitants per employee in Musanze is 1,95 times higher than in Nyamasheke. Besides the internal differences, external factors differ as well. In Nyamasheke more people are member of Community Based Micro Insurances, on average 80% of the population is implicated and the figure is constantly growing. In Musanze the percentage of citizens implicated in the CBMI was in 2006 on average 65%, this would indicate either a less effective system of reaching the indigents, lower well fare levels or higher ignorance of the population.

Regarding the statistics provided in this chapter it has to be concluded that the health centres in the district of Nyamasheke are in a better shape than the health centres in Musanze. In the next chapters more indicators will be compared to see how other aspects of functioning differ between the two districts.

5. Comparison of financial & human resources

In this chapter a comparison of the financial and human resources will be given. Health care is a complex web of many factors influencing each other and as a result in this report data will be used multiple times to make the right comparisons. Financial and human resources strongly affect the capabilities of an health centre, without the necessary number of qualified health workers it cannot be expected that the health centre delivers qualitatively optimal services to patients, nor that it can serve all patients. Without the necessary financial resources health centres can't invest in training of staff, new equipment, infrastructure or strategies to sensitize the population. Two indicators for performance are central in this chapter, 'Improved quality of services' indicator V for effect of the contract and indicator IV 'Increased access to knowledge through technical supervision and training' effect for supervision. The basis for these indicators is the training of personnel, access to technical assistance, regular external supervision, feedback and improvements of competence, sufficient equipment, and the salary levels. Aspects which have a strong interrelation with the financial and human resources of health centres.

Nyamasheke

Health center	Nyamasheke	Gatare	Mukoma	Muyange	Kibogora	Kamonyi	Hanika	Bushenge	Average	Total
Total number of personnel	33	29	25	24	27	19	18	23	24,8	198
# of contracts with the gov	18	14	9	10	10	8	7	15	11,4	91
# of personnel contracted by projects			4	1			0		0,6	5
# of qualified personnel	23	18	17	17	17	13	10	19	16,8	134
# of agents for the MuSa		1	3	1			1	1	0,9	7
% qualified / total	69,7%	62,1%	68,0%	70,8%	63,0%	68,4%	55,6%	82,6%	67,5%	n.a.
Target population	17.504	26.874	26.616	25.484	27.649	19.722	10.907	30.637	23.174	185.393
# of Inhabitants / Qualified HW	761	1.493	1.566	1.499	1.626	1.517	1.091	1.612	1.384	11.165
# of Inhabitants / Total Hws	530	927	1.065	1.062	1.024	1.038	606	1.332	936	7.584
Utilization rate	10,45%	7,44%	7,14%	6,67%	10,49%	13,69%	7,79%	9,79%	9,2%	9,10%

Musanze

Health center	Gasiza	Kinigi	Busogo	Karwasa	Shingiro	Bisate	Muhoza	Kabera	Average	Total
Total number of personnel	24	18	15	9	12	14	34	15	17,6	141
# of contracts with the gov	2	5	7	5	2	3	17	0	5,1	41
# of personnel contracted by projects	5	1	1	3	0	0	5	5	2,5	20
# of qualified personnel	16	12	9	6	6	8	24	8	11,1	89
# of agents for the MuSa	2	1	1	1	0	1	2	1	1,1	9
% qualified / total	66,7%	66,7%	60,0%	66,7%	50,0%	57,1%	70,6%	53,3%	61,4%	n.a.
Target population	23.309	33.778	34.120	25.636	31.003	15.746	77.140	17.001	32.217	257.733
# of Inhabitants / Qualified HW	1.457	2.815	3.791	4.273	5.167	1.968	3.214	2.125	2.896	24.810
# of Inhabitants / Total Hws	971	1.877	2.275	2.848	2.584	1.125	2.269	1.133	1.828	15.081
Utilization rate	4,08%	5,03%	2,93%	4,29%	1,94%	5,72%	6,22%	2,35%	4,1%	4,44%

5.0.1 Salaries paid by the government

The two tables above contain the data gathered from interviews with the health centre chiefs, the figures give an overview of all health centres visited and their personnel. During the field study health workers in Musanze noted several times that they regret the fact that they don't have a contract with the state. In case the government pays for a health worker's salary, he / she is given a fixed salary of 94.400Fr per month, ~131€. The health centre does not have to pay the salary. This increases the gap between health centres with a high number of employees paid by the state and the health centres which have to offer their personnel lower salaries and spend a significant percentage of their budget on salaries. In the data gathered for each health centre the differences between health centres seems to be rather large for the number of contracts with the government. In Nyamasheke 46 % of the employees is contracted by the state, while in Musanze only 29% of the employees has a contract with the state. In Nyamasheke the government has contracted one qualified health worker for each 2037 inhabitants while in Musanze one qualified health worker for 6268 is contracted. These differences are odd as one could expect the control province to be equally treated in the number of contracts given to a district. The extra number of people contracted by special projects and international programs do not make up for the difference caused by the government contracts. The number of agents for the 'MUSA', Mutuelle de santé, the CBMI, seems to be based on the number of citizens, and is indeed more or less equal. On average the health centres use a similar proportion of qualified / non qualified personnel although in Nyamasheke the percentage of qualified personnel is slightly elevated, 61.5% qualified staff in Musanze versus 67.5% in Nyamasheke. In Nyamasheke the average number of qualified people per health centre is 16,8 people. While in Musanze this is 11,1 qualified health workers per health centre, which is 33% less than in Nyamasheke. Such differences make health centres in Musanze more sensible for illness of personnel. Personnel risks being overcharged and motivation levels can drop.

5.0.1 Training and equipment

This section covers training of staff, feedback from supervision and the constraints due to infrastructure and equipment. These aspects are at the basis of performance. The knowledge through training focuses on the relationship between supervision and quality of personnel and services from the professional point of view. In the table below a comparison is given between the

answers on questions in the interviews and questionnaires held. Respondent were asked to give their opinion for the questions, based upon their experiences for their service. Material or competence constraints are more likely to occur at the maternity and accountability services than at the pharmacy. In Nyamasheke 30 staff members filled out the questionnaires N=30, in Musanze 29 respondents were found, N=29.

Indicator	Nyamasheke		Musanze		Difference	Total
	'Yes'	Percentage	'Yes'	Percentage		
% of employees stating 'enough materials'	16	53,3%	4	13,8%	286,7%	33,9%
% of employees stating there are trainings	24	80,0%	22	75,9%	5,5%	78,0%
% of employees stating 'technical assistance' is easy	16	53,3%	16	55,2%	-3,3%	54,2%
% of HC chiefs stating the personnel is 'devoted'	8	100,0%	7	87,5%	14,3%	93,8%
% of HC chiefs stating there are enough materials	2	25,0%	1	12,5%	100,0%	18,8%

The largest difference between the two districts lies in the lack of equipment in Musanze. Nyamasheke still has 75% of their health centre chiefs stating there are not enough medical materials and 46,7% of the staff stating that their service has not enough materials. However compared to Musanze these figures are positive. In Musanze only the manager of Muhoza, the HC next to the district hospital, could say their HC has sufficient medical equipment. All 25 respondents from the other 7 health centres including their chiefs (7) thought there are not enough materials. This indicates that for the HC's it is obvious that a bottleneck exists in the lack of equipment and material despite this awareness, the problem still exists. Explanations should be sought in the liquidity of health centres, a large part of the budget, which is already significantly smaller than in Nyamasheke, is spend on medicaments and salaries which leaves little money for investments. The equipment constraints and the small financial capabilities appear to not affect access to trainings and technical assistance. The indicator for the devotion of personnel might be biased a little as HC chiefs answered this question rather defensively, during the interviews HC it could be noted that in general managers are quite content with the staff's devotion. A side note should be made, in discussions with three different ex-pat doctors for hospitals in Musanze, Kigali and Butare, other information was given. The three ex-pat doctors independently agreed on the fact that motivation and devotion for Rwandan employees is quite different from the western standards for devotion. Their experience was that punctuality is highly variable as is the intrinsic motivation.

5.0.3 Budget use and monthly expenditure

The next two tables contain data on the use of budgets for both districts, the percentages are a little flawed due to missing information or 'estimations' by health centre managers. It proved to be difficult to transform the budget overviews in the monthly 'Rapport SIS' to categories such as 'maintenance' and equipment. Only later in the field study the researcher had sufficient experience to check and guide the answers more. The budget in practic does not exists from just the four categories as given below but the other posts are minimal 1~3% of the total budget. Figures should thus be used as an indication. Expenditures are monthly and currency is calculated on a 1€ = 720 FRW basis.

Indicators	Nyamasheke	Musanze	Difference	Average
Salaries & primes	€ 1.463,3	€ 412,6	254,6%	€ 937,9
Equipment	€ 1.103,1	€ 169,9	549,4%	€ 636,5
Maintenance	€ 381,4	€ 48,8	681,9%	€ 215,1
Medicaments	€ 2.012,4	€ 1.024,4	96,4%	€ 1.518,4
Other	€ 0,0	€ 243,4	0,0%	€ 121,7
Average total monthly expenditures	€ 4.960,2	€ 1.899,0	161,2%	€ 3.429,6

Indicators	Nyamasheke	Musanze	Difference	Average
Salaries & primes	29,5%	21,7%	35,8%	25,6%
Equipment	22,2%	8,9%	148,6%	15,6%
Maintenance	7,7%	2,6%	199,3%	5,1%
Medicaments	40,6%	53,9%	-24,8%	47,3%
Other	0,0%	12,8%	0,0%	6,4%
Total	100,00%	87,18%	14,7%	93,59%

The differences in spending are interesting to see, health centres in Nyamasheke can spend 161% more than the health centres in Musanze. Regarding this difference it is to be expected that in Musanze higher percentages of the budget are needed to fund the elementary needs of the health centre such as Medicaments and maintenance. The figures show that expenditures for salaries in Musanze are low. A health centre in Nyamasheke has 24,8 of which 11,4 are paid by the state, 0,6 are paid by projects and 0,9 are agents for the CBMI, thus on average a HC in Nyamasheke pays for 11,9 employees. Based on the expenditures for salaries and primes (weekend shifts, not the PBF primes) on average, 122€ is paid per employee. It has to be noted that these are averages and based on the budgets as provided by HC chiefs, in the questionnaires employees provided their salaries of which a detailed overview will be given in chapter 6. In Musanze a health centre employees 17,6 people of whom 5,1 are paid by the state, 2,5 by projects and 1,1 by the CBMI. On average 8,9 employees are paid by the HC for whom a budget of 412€ is reserved, 46,29€ per employee per month. The large difference in salary levels paid by the HC's in Musanze and Nyamasheke can indicate that in Musanze money is saved on salaries because it is needed for other expenditures. If the HC's in Musanze suffer from a lack of financial means medicament expenditures should be in line with the utilization rate compared to Nyamasheke and savings would be made at maintenance, salaries and investments in new equipment. The HC's of Nyamasheke invest 22,2% of their budget in new equipment compared to Musanze an elevated percentage. With monthly expenditures of 1.103€, 549% more is spend on equipment than in Musanze. The high amount of budget used for investments in Nyamasheke can indicate at the use of different strategies. Either there is an increased awareness of bottlenecks and HC managers are encouraged to solve them with investments in more and new medical equipment, or HC managers are applying strategies to improve the quality and capacity of their services by investing in modern equipment. In Nyamasheke several HC's had bought computers and vehicles, costly investments in the long term functioning of the HC. For Musanze it can either indicate severe liquidity issues or less innovative management. There is a possibility that the lower utilization and budgets of HC's in Musanze are caused due to a lack of innovation and growth. When HC chiefs give insufficient priority to long term investments or are unaware of bottlenecks this could cause a HC to become increasingly incapable of providing all services at high quality levels.

The budget overview shows how priorities are set by HC managers. The differences in expenditures on equipment reflects the response from the questionnaires. In Musanze's HC's 8,9% of the budget is spent on equipment and materials, in the questionnaires 86,2% of the staff and 87,5% of the HC managers stated that there is not enough medical equipment. Of the four categories in the budgets the expenditures on medicaments can be assumed to be most essential, one can reduce expenditures

by minimalizing stock but a health centre preferably doesn't have to sell 'no' to patients. If we let the number of patients treated in the health centre be an indication for the number of people requiring medicines we can compare the expenditures for medicaments with the utilization rate as determined in chapter 4. Nyamasheke 16 880 patients at the external consultation, on average, each month. The monthly expenditures of 2.012€ corresponds with 0,119€ per patient. The health centres of Musanze treat 11 450 patients on average, each month. The monthly expenditures of 1.024€ corresponds with 0,089€ per patient. Now this is interesting, because the absolute spending on medicaments for Nyamasheke is 96% higher while the spending per patient treated is 33,8% higher. This could indicate that the health centres of Musanze reduced their spendings on medicaments to an absolute minimum of 0,089€ per patient. In other words this shows that the health centres in Nyamasheke are in a better economical position as they do not struggle in the same degree finding the resources to fund the functioning of the health centre. If the two districts were indeed unbiased control districts the given better economical position would point at the ability to find financial resources such as insurances, correct user fees and the incentives for services and higher quality standards. Considering the bias in government contracts and the level of the primes each quarter it is harder to conclude anything on fund raising strategies, however it appears that the HC's of Nyamasheke have managed to spend and invest their money better than the HC's in Musanze, resulting in a better financial position.

6. Motivation & constraints

In the interviews health centre chiefs in Nyamasheke were asked what had changed most since the introduction of PBF and what the best benefit of PBF is to their health centre. All respondents answered that employees are better motivated since they can increase their salaries. This chapter will explore the constraints for health centres, services and personnel. Motivation of health workers is seen as the basis for productivity and quality of health services. Motivated staff is more willing to exert the necessary effort to carry out services according to standards and in a manner that is respectful of the user (Franco, Bennett et al. 2002). Maslow²¹ provides a simple framework for human motivation, if the basic needs of a human being cannot be satisfied he cannot get satisfaction from the 'higher needs'. Discussions on motivation in Rwanda focus strongly on material and physical aspects of the work. When asked what motivated personnel to do a good job more than 70% said that this is the remuneration. Trainings are not considered as a form of salary or payment by the employer, they are seen as obligatory and often little interesting. Intrinsic motivation in Rwanda is considerably lower than the materialistic motivation. Maslow's theory can support and explain why this observation is true. Salary levels for qualified personnel are barely enough to pay for daily needs. In Rwanda a typical family of 6 people in the rural district would need 3000-5000 Fr per day. Depending on the type of food and rent. For the context, personally I was unable to live on a tight budget below 4500 FR per day for just myself. In euro's this is 4€ - 7€ per day. A health worker paid by the health centre on average earns 55€ per month, 1,83€ per day, an employee paid by the government earns 130€ per month. Compared to the daily needs the salary paid by the health centres can be considered 'insufficient'. The inability to satisfy the basic needs, food, water, rest and shelter, causes personnel to focus on the more materialistic motivators.

²¹In 1942 the American psychologist, Abraham Maslow, proposed his Hierarchy of Needs theory in his paper '*A Theory of Human Motivation*'.



6.1 Factors influencing motivation levels

Quantifying motivation is tough, that's why again multiple indicators will be used to give an idea. The section covers favorable circumstances for good employee motivation and explores the current motivation levels for staff of the health centres in both districts. Assumed is that with a higher motivation of staff, patient's satisfaction will go up, more often managers will say that their personnel is devoted and patients indicate that they were well received. Personnel was asked what motivates them most in their work, results are displayed in the table below. Based on these statistics it can be concluded that circumstances positively affecting motivation are the following:

- Level of salaries and primes.
- The intrinsic motivation by the work such as professional consciousness, pleasure from the work and the desire to satisfy the patient.
- Training and improving certificates and knowledge.

Furthermore there are constraints which reduce motivation levels such as being overcharged with work, lacking the necessary medical equipment, lack of infrastructure and basic assets as electricity, water and means of transport.

Getting a good indication of the motivation level has proven to be tough, 15 out of 16 health centre chiefs argued that their personnel is devoted and surveys under patients were not possible due to language and administrative barriers. The data available is the evolution of patient satisfaction for the province of Cyangugu, and therefore these figures can only apply to Nyamasheke. Patient satisfaction was taken for each 3rd quarter of the year. There is a decrease in patient satisfaction during the period 2004 – 2006, however this can have many causes. More critical patients, introduction of micro insurances, less time per patient, reduced quality of service, introduction of bureaucratic administrative procedures, longer waiting time (due to increased utilization). Therefore we cannot conclude that motivation levels of staff have dropped since 2004.

Average patient satisfaction 3 rd quarter	2003	2004	2005	2006
Patient satisfaction	95%	97%	93%	87%

6.1.1 motivation by remuneration

A better insight in motivation can be retrieved by evaluating constraints and salary levels. In the questionnaires it was asked to give an indication of the monthly remuneration, salary plus the primes from PBF and other bonuses. Unfortunately this question appeared to be considered as a difficult question, resulting in low quality information.

Although one thing became very clear, the difference between a governmental salary and a salary as paid by the health centre is very large. In Nyamasheke the salary paid by health centres is at 46% of the monthly salary as paid by the government. In Musanze the HC pays at 39% of the government's salary level. If the financial resources are available in Nyamasheke the question arises why they do not tighten the gap between HC's salaries and state's salaries.

Remuneration (salary + primes)							
Indicator	N= ?	Nyamasheke	In euros	N= ?	Musanze	In euros	Difference
Government salary	20	94.104 F	€ 130,7	1	94.104 F	€ 130,7	0,0%
Average salary by the HC	7	43.543 F	€ 60,5	15	37.133 F	€ 51,6	17,3%
Average salary by projects and NGOs	n.a.	n.a.	€ 0,0	10	100.280 F	€ 139,3	n.a.
Average prime	19	10.079 F	€ 14,0	4	19.500 F	€ 27,1	-48,3%
Average income per month		80.996 F	€ 112,5		63.612 F	€ 88,3	27,3%
Average monthly income, including prime		91.075 F	€ 126,5		83.112 F	€ 115,4	9,6%
% of HC chiefs stating the salary is sufficient	8	100,00%		7	87,50%		

Other interesting facts are the differences in primes, in Nyamasheke the average prime per employee is nearly half the prime in Musanze. Despite the fact that the total amount of primes in Nyamasheke received is more than double the amount of primes received in Musanze. The primes for people with a lower income, paid by the health centre, do not get an extra prime to close the gap in salaries. The average income, including primes is 27,3% higher in Nyamasheke than in Musanze. The level of primes and the percentage of primes in relation to the salary levels do affect motivation. 40,6% of all respondents indicated that their motivation comes from primes, another 13,5% of respondents indicated that they are motivated by the combination of salaries and primes. The most prominent alternative source of motivation is the work. Interesting to see is the elevated percentage of respondents who are motivated by the work in Musanze. In Musanze 37,8% of the respondents stated that their motivation comes from the work. The relationship between performance and remuneration was in turn significantly lower than in Nyamasheke. In Nyamasheke 86,7% of the respondents said that there is a relationship between their performance and their remuneration, relatively 47,8% more than in Musanze. The figures allow for an assumption that the salary and prime levels in Nyamasheke are passed a critical point that they indeed do motivate personnel, while in Musanze salaries and primes are probably too low to be a catalyst for motivation. A bias can be that the respondents in Nyamasheke do realize that their primes rely on the success of the PBF approach, which might inflate the relationship and motivation by primes statistics. Note that in the table below 'motivated by the work' is a summary of responses declaring professional consciousness, joy from the work, and the desire to help patients to be the source of motivation.

Indicator	Nyamasheke	Musanze	Difference
# of employees motivated by salary	3	5	-40,0%
# of employees motivated by primes	14	10	40,0%
# of employees motivated by salary & primes	5	3	66,7%
% of employees motivated by salary	10,0%	17,2%	-42,0%
% of employees motivated by primes	46,7%	34,5%	35,3%
% of employees motivated by salary & primes	16,7%	10,3%	61,1%
% of employees motivated by trainings	0,0%	6,9%	-100,0%
% of respondents motivated by 'nothing'	13,3%	13,8%	-3,3%
% of respondents motivated by 'the work'	30,0%	37,9%	-20,9%
% relationship between remuneration & perf.	86,7%	58,6%	47,8%

6.1.2 more to motivation than money

In paragraph 6.1.1. it became evident that personnel in both districts are particularly motivated by money. But there are other reasons for motivation as well, the sources of motivation can be divided in three categories, materialistic, intrinsic and no motivation at all. All four respondents in Mukoma, Nyamasheke, responded that they were not motivated at all or that there was nothing which could motivate them.

Motivation overview

Indicator	Nyamasheke	Musanze	Difference	Total
# of respondents motivated by 'money'	22	18	22,2%	40
% of respondents motivated by 'money'	73,3%	62,1%	18,1%	67,8%
# of respondents motivated by 'the work'	9	11	-18,2%	20
% of respondents motivated by 'the work'	30,0%	37,9%	-20,9%	33,9%
# of respondents motivated by 'no thing'	4	4	0,0%	8
% of respondents motivated by 'no thing'	13,3%	13,8%	-3,3%	13,6%
% relationship between remuneration & perf.	86,7%	58,6%	47,8%	72,88%

Motivated by work

Indicator	Nyamasheke	Musanze	Difference	Total
# of employees motivated by 'the work'	9	11	-18,2%	20
% of which is due to prof. consiousness	55,6%	27,3%	103,7%	40,0%
% of which desires to satisfy the patient	22,2%	36,4%	-38,9%	30,0%
% of which out of passion for the work	22,2%	36,4%	-38,9%	30,0%
% working for a non-plubic HC	33,3%	54,5%	-38,9%	45,0%

The short overview shows that in Musanze 54,5% of the respondents motivated by the work operate in health centres run by the church. Their sources of motivation are passion for the work and caring for the patients. In Nyamasheke the respondents who were motivated by the work are motivated by the work because of the professional consiousness, they want to do their job as well as possible. Relatively seen the salary levels seem to effect the sources of motivation only marginally, the lower remuneration seems to increase intrinsic reasons to keep doing a good job. In Nyamasheke 18% more employees are motivated by money, showing that topping up salaries with primes is a reason for more people to be motivated.

6.2 Favorable secondary conditions

Another aspect for motivation of staff are the working conditions they work in, although these appear to be have a less important influence than salary levels. Health centre chiefs and health workers were asked to identify the service which has to deal with the most severe capacity

constraints (personnel or material). In this survey constraints were related to a location, for example if a location did not have access to electricity all of the respondents in that hospital mentioned this as a constraint. A similar relationship exists between the service and the constraint. Health workers with a responsibility for the laboratory or the accountancy frequently mentioned a lack of material as their most important constraint. The insufficient salaries constraints were only stated by respondents who are paid by the health centre instead of the state. The first table shows at which service the most severe constraints were perceived. Health centre chiefs in Nyamasheke mentioned personnel's issues for the HIV services and the Curative Consultation, qualified personnel is the biggest constraint for these services. The service of maternity often lacks the necessary equipment such as delivery tables and running water. For Musanze the 'comptabilité' was a difficult service, personnel and materials (computers, calculators, archives) are lacking at the accountancy. For the personnel the service with the highest amount of constraints is the external consultation as it is a overly busy service and employees have to deal with the pressure.

Indicators	Nyamasheke		Musanze	
	HC chiefs	Personnel	HC chiefs	Personnel
Curative consultation	37,5%	48,3%	37,50%	57,6%
Maternity	37,5%	6,9%	12,50%	6,1%
Laboratorium	0,0%	0,0%	12,50%	9,1%
Pharmacie	0,0%	3,4%	0,00%	12,1%
HIV services	12,5%	13,8%	0,00%	3,0%
Vaccination	0,0%	3,4%	12,50%	3,0%
Comptability	0,0%	3,4%	25,00%	3,0%
Others	12,5%	20,7%	0,00%	6,1%

Indicator	Nyamasheke	% of total	Musanze	% of total	Difference	
# of respondents stating no constraints		3	5,2%	1	1,5%	200,0%
# insufficient primes		3	5,2%	3	4,5%	0,0%
# insufficient salary		4	6,9%	7	10,4%	-42,9%
# insufficient personnel		3	5,2%	16	23,9%	-81,3%
# insufficient trainings		3	5,2%	2	3,0%	50,0%
# insufficient housing for personnel		7	12,1%	2	3,0%	250,0%
# the state of the building is a constraint		6	10,3%	5	7,5%	20,0%
# Insufficient materials		10	17,2%	12	17,9%	-16,7%
# Insufficient equipment		2	3,4%	0	0,0%	n.a.
# Too much work / overwork		2	3,4%	9	13,4%	-77,8%
# Insufficient means of transport		7	12,1%	4	6,0%	75,0%
# Lack of electricity and water		3	5,2%	4	6,0%	-25,0%
# Lack of communication means		2	3,4%	0	0,0%	n.a.
# Ignorance / awareness of the population		1	1,7%	1	1,5%	0,0%
# Too many administrative tasks		1	1,7%	0	0,0%	n.a.
# Lack of motivation		1	1,7%	1	1,5%	0,0%
Average constraints per respondent		1,93		2,31		-16,46%
Total number of constraints		58		67		

The table containing data on the constraints as experienced by the staff shows that in Musanze many elementary constraints exist, insufficient personnel, too much work and insufficient materials. These constraints put serious restrictions on the capacity of the health centre, those bottlenecks have to be dealt with before the health centres can increase performance. Overcharged work combined with low salaries can work in a negative spiral of motivation and productivity. Discouraging working conditions -> lower motivation -> lower productivity -> more overwork -> decreased motivation. In Nyamasheke the perceived constraints are of a more luxurious category and less in number on average respondents in Nyamasheke filled 1,93 constraints where the questionnaire

asked for 2 constraints. The respondents of the questionnaires in Musanze often mentioned 3 constraints, resulting in an average of 2,31 perceived constraints per respondent, 19,7% more than in Nyamasheke. Housing, means of transport and communication are constraints mentioned by Nyamasheke, these could be classified as bottlenecks but of less importance as the lack of electricity, personnel and medical equipment.

Indicator	Constraints by HC chiefs				
	Nyamasheke		Musanze		Difference
	Mentioned	Importance	Mentioned	Importance	
Insufficient trainings for personnel	2	6,3%	1	2,1%	200,0%
Insufficient qualified personnel	1	4,2%	7	35,4%	-88,2%
Insufficient financial means	0	0,0%	1	4,2%	n.a.
Inadequate building	2	8,3%	4	14,6%	-42,9%
Lack of infrastructure	1	4,2%	0	0,0%	n.a.
Insufficient medical equipment	3	18,8%	6	27,1%	-30,8%
Insufficient means of transport	3	18,8%	1	4,2%	350,0%
Lack of access to electricity and water	3	8,3%	3	6,3%	33,3%
Lack of motivation of the personnel	1	4,2%	0	0,0%	n.a.
Difficult geographical situation	2	4,2%	0	0,0%	n.a.
Ignorance of the population	5	20,8%	0	0,0%	n.a.
Inability to provide all services	1	2,1%	0	0,0%	n.a.
Too much work / overwork	0	0,0%	1	6,3%	n.a.
Total	24	100,00%	24	100,00%	

The difference in degree of constraints could indicate that the health centre managers in Nyamasheke either have applied the right strategies to deal with the bottlenecks on capacity for their health centre, thus increasing the utilization rates and the financial prospects of the HC, or it indicates that because of a better access to financial means, less elementary problems exist.

The managers of the health centres were asked to identify the three most important constraints for the functioning of their health centre. Surprisingly the constraints do differ from the constraints identified by the staff. The importance is a weighted figure, the most important constraint was awarded 3 points, the least important received 1 point. Chiefs in Nyamasheke identified the ignorance of the population as most important problem, insufficient equipment and transport were perceived as heavy constraints as well, however compared to Musanze the insufficient equipment is a less severe constraint in Nyamasheke. In line with the data from the personnel Nyamasheke shows less internal and elementary constraints, geographical situation and the ignorance of the population are mentioned as constraints while in Musanze all constraints reflect internal problems. Data from this survey supports the observation that in Musanze HC's cope with capacity constraints for personnel, equipment and infrastructure is the most important constraint.

The health centres in Musanze have to solve internal difficulties first, the fact that the HC's are still focusing on their own functioning to increase performance shows that the managers are less engaged in sensitizing and reaching the population. Which would be an explanation for the low utilization rates in Musanze. On the other hand, managers of HC's in Nyamasheke seem to be in good shape, their internal constraints exist but the financial situation allows for interventions and as the expenditures showed in chapter 5, managers are indeed investing in the functioning of their health centres. Meanwhile they are concerned with the population, the ignorance of the population is mentioned as the most important constraint. It can be expected that the awareness of this problem results in HC chiefs looking for solutions and strategies to reach the population. The strategies which are already in place within the framework of the ministry of health include 'advanced strategies', household visits, animators for the health centre, promotional actions, healthcare posts in the rural areas, visits at the church, Umuganda and Gacaca to spread written propaganda and give advice, formal and informal. Advanced Strategy, 'Stratégie Avancées', is the name of the approach applied by health centres to reach the difficult to reach groups. Nurses descend into the population to set up a post in the rural areas, prenatal consultancies are given, and services as

family planning and vaccinations of the abandoned are provided. The regularity of the strategies to sensitize the population is relevant for the effects, in Musanze on average HC's perform the advanced strategy once a month while in Nyamasheke some health centres provide the vaccination services twice a week.

As mentioned secondary factors affecting motivation levels are access to assistance, training and participation in decisions. In the table below an overview is given of the answers by the respondents. Surprisingly in both districts the indicators score quite similar, except again on the sufficient medical equipment. In both districts 15 respondents felt they were able to participate in management, either directly or indirectly.

Working conditions

Indicator	Nyamasheke		Musanze		Difference
	'Yes'	Percentage	'Yes'	Percentage	
% of respondents 'participating' in management	15	50,0%	15	51,7%	-3,3%
% of respondents stating 'enough materials'	16	53,3%	4	13,8%	286,7%
% of respondents stating there are trainings	24	80,0%	22	75,9%	5,5%
% of respondents stating 'technical assistance' is easy	16	53,3%	16	55,2%	-3,3%

From the statistics in this chapter it can be concluded that the financial position of the health centres in Musanze is significantly worse than in Nyamasheke, resulting in lower salary levels and many internal bottlenecks. Further research should try to isolate two districts in which health centres have similar financial conditions so that a more appropriate comparison can be made for the real motivation levels. Another conclusion which can be drawn from this chapter is that materialistic motivation is for Rwandans indeed a strong motivator, increasing the likeliness that indeed the performance based funding approach increases motivation and productivity of personnel using incentives for stimulation.

7. Management and supervision

Performance Based Funding is an approach based on the stimulation of the entrepreneurial spirit of managers, using the contract as a leverage and the supervision as a tool to train and guide incremental progress. Better management results in creative strategies to reach the target population, managing and instructing staff, regular evaluation of progress on targets set in business plans, regular reunions with the Committee of Health and the Committee of Management, democratic decisions, Staff reunions, recruiting and training of qualified personnel and dealing with bottlenecks in the right way. Regular supervision by external experts results in an increased accountability and responsibility of performance, personnel can be trained on site and adequate feedback results in improved quality of services. Internal supervision allows for control of quality and an increased awareness of constraints and difficulties. Making up the inventories regularly and the timely and correct identification of problems results in improved functioning of the health centre, but appropriate decisions of the health centre management are necessary to successfully deal with problems. In this chapter these aspects of health centre functioning will be explored. Both districts will be compared on the aspects of management, decision making, strategies in place and the regularity of supervision, reunions and inventory checks.

Accountability and transparency

Indicator	Source of information	How to measure?
Percentage unconfirmed patients	Patients	CBO organised checks
Accessibility of reports and statistics	Reports & graphics	Observation
Correct data in books	Administration	Verification
Complete information in reports	Administration	Verification

Further research is needed to verify the data in the books, for the time being we will assume that the accountability of administration is in line with the inflated records for patients. CBO's checked in the questionnaires whether the patient records of HC's did indeed exist. When Cordaid was still fund holder and donor for the health centres in Cyangugu, scores on indicators were checked for abnormalities, if these were the case health centres were asked for an explanation. Nowadays the responsibility of checking the accountability of health centres is with MINALOC, the ministry of local government. On the district level data and scores for the performance indicators of Cordaid Rwanda are gathered and verified. Cordaid Rwanda still supervises and assists the districts role in this. This is necessary as the district regards supervision and verification as expensive and time consuming the verification there are real risks of corruption and false records.

Average patient confirmation 3 rd quarter	2003	2004	2005	2006
Percentage of patients confirmed	74,1%	98,0%	98,8%	99,6%

From the data it can be shown that before the first verification more than a quarter of the patient records could not be confirmed. Within one year the inflation of records was reduced to 2%, for the third quarter of 2006 the accountability of patient records had even increased to a 99,6% accuracy. The evolution of the 'ghost patient records' shows the risk of falsification and inaccuracy purposely or not, at the same the effect and importance of verification and supervision is shown. The accessibility of reports and statistics has been measured qualitatively, the researcher made observations in the office of the health centre manager. In both districts the rapport 'SIS' was used and managers were familiar with it, however in Nyamasheke it was obvious that chiefs were more organized. Archives with reports were easily accessible and well organized. In 7 out of 8 health centres in Nyamasheke management information was displayed at the walls and reports, sheets with graphics and information on the progress of certain services and other developments. In Muhoza in only 4 out of 8 health centres were sheets and graphics at the walls. In general health centres in Muhoza had their administration less easily accessible compared to the organized desks and archives in Nyamasheke. This could indicate either that health centres in Nyamasheke are more used to supervision and need their management information to be easily accessible, or it means that managers in Musanze pay less attention to the evaluation and monitoring of progress of their performances.

In Kibogora the health centre chief mentioned that each services has an evaluation periodically, so on a regular basis performance and problems are evaluated and action is taken upon this information.

7.1 Dealing with changes in the environment

An important aspects of health care in which better managers can excel is the capability to deal with changes in the environment. The health system is being reformed and external influences (economical, social and political) demand the health centres to cope with the changes in a flexible manner. At the beginning of 2005 the Community Based Micro Insurances were introduced and as result health centres had to adept their strategies and administration, besides they had to cope with the increase in number of patients maintaining quality standards. Respondents were asked to give their opinion on the effect of Community Based Micro Insurances for their service and for the patients. In Nyamasheke the respondents of the health centre of Mukoma and Muyange responded

that since the introduction of the insurances quality had reduced. Respondents said that there was a certain number of patients who came 'unnecessarily' to use their 'membership' increasing workload. It is possible that both health centres experienced problems during the introduction of insurances. In Musanze none of the respondents thought there were negative effects for the quality of services. Either because the services in Musanze were overcharged already before the insurances or because the introduction of insurances was incremental and better coordinated.

District	Nyamasheke		Musanze		Difference
	'Yes'	Percentage	'Yes'	Percentage	
Did you work before the introduction of CBMI?	23	76,7%	21	72,4%	5,9%
The mutuelle had a negative effect on the quality of services?	7	23,3%	0	0,0%	n.a.
The introduction of CBMI has increased financial accessibility?	27	90,0%	28	96,6%	-6,8%
% of the target population implicated in CBMI		85,0%		65,0%	30,8%

In general personnel was positive about the effects of the insurance on the financial accessibility of services, it had greatly increased according to 93,3% of the respondents. A big difference however is the implication rate in insurances, as already explained in chapter 4.1. This could indicate that the management of HC's in Nyamasheke dealt with the change better and uses strategies on a more regular basis to spread advice on health services and the importance of micro insurances. The table below shows information on the regularity of inventory checks and the democracy of decisions. The sub contracting of private dispensaries in Nyamasheke is an innovative strategy to increase capacity and utilization, in Musanze this concept was unheard of while in Nyamasheke 50% of the HC's had contracted at least one private dispensary. Although all personnel is indirectly implicated in management through the personnel's reunions, there are differences in the number of people directly involved in management. In Nyamasheke health centres have besides the committee of health a committee of management as well. In Musanze such committee does not exist and as a result in Nyamasheke 75% more people are directly involved in management. Often democratic decision and input from more experts creates better circumstances for creative solutions and good decisions. An interesting given from the gathered data is that in Nyamasheke on average 4,8 times a year the inventory for services is checked, damaged or missing equipment is then reported to the management of the health centre and the follow-up is usually a replacement of the missing materials. In Musanze inventories are checked 6,1 times per year, 27% more often than in Nyamasheke. However the lack of materials and equipment in Musanze is a severe constraint as shown in chapter 6. Either something is wrong with the follow-up on inventory checks or inventories are checked often to replace the tools in worst shape first to fit within the budget. Despite the less regular checks in Nyamasheke problems based on the lack of equipment are less constraining than in Musanze.

Indicator	Nyamasheke	Musanze	Difference
Average times per year inventory is inspected	4,8	6,1	-21,3%
People implicated in management	7,0	4,0	75,0%
Percentage of HC with sub contracted dispensaries	50,0%	0,00%	n.a.
Instructions for personnel to integrate services?	100,0%	100,0%	0,0%

As mentioned before health centres try to integrate services when patients arrive at the health centre, for example pregnant women who arrive for the vaccination of their child are given prenatal consultancies and advice on family planning. To ensure personnel is alert for opportunities to integrate multiple services upon one health centre visits personnel receives instructions. In both districts staff meetings at the beginning of the day are normal during the briefing staff is instructed according to the strategies and goals of the health centre. All health centres used these strategies to instruct personnel.

Before visiting the district of Musanze the assumption was made that Musanze would not have the same strategies in place to sensitize the population such as the advanced strategies and the spreading of written messages at large gatherings. However, in Musanze exactly the same strategies appeared to be used by all health centres and HC managers stated that these strategies were made

obligatory by the ministry of health. So the assumption that Nyamasheke's managers would have come with new and innovative strategies seemed to be false. However, the intension and the devotion with which the strategies are carried out does differ. HC managers in Nyamasheke invest in means of transportation in order to mobilize health workers and increase the regularity with which the 'advanced strategy' can be carried out.

7.2 Supervision & evaluations

In this section external and internal supervision will be explored, as well as the evaluation of performance and the feed back on supervisions. The quality of feedback is an indication for the effectiveness of supervisions, health workers were asked to give their opinion on the feedback and whether they did see their competences improved due to the external supervision, the quality assurance. The awareness of which items were inspected indicates how responsible staff feels for the progress of quality on certain aspects of their service. Each service is evaluated on several items by the quality assurance, based on these items the total performance of the service is assessed. In case the employees are 100% aware of what items are important they can specialize in improving their skills. An example is the hygiene and methods used for midwives who assist institutional deliveries, if they are aware of the routines and expectations from supervisors they are able to improve their routines to increase their quality score. Feedback and awareness offer a tool to incrementally train employees and increase quality standards in health centres. The contract offers them the leverage because if the training shows results and quality increases, the health centre receives a higher prime. In Musanze this system is in place but less organized and structured. The district hospitals do not visit health centres on a regular basis and no contracts are in place to put pressure on improvement. In Musanze only warnings and comments can be given when there are mistakes or no improvement is shown, which stimulate less than rewarding if there is indeed improvement. The table below displays the answers on the questions on supervision N=30 for Nyamasheke, N= 29 for Musanze.

Indicator	Nyamasheke		Musanze		Difference
	'Yes'	Percentage	'Yes'	Percentage	
Regular internal supervisions?	28	93,3%	28	96,6%	-3,3%
Regular external supervisions?	29	96,7%	17	58,6%	64,9%
Are you aware of the items being inspected?	30	100,0%	24	82,8%	20,8%
Sufficient feedback after supervision?	28	93,3%	26	89,7%	4,1%
Do you think your skills were improved?	29	96,7%	22	75,9%	27,4%

In both districts internal supervision is regular, respondents who replied the supervision is not regular work at services which are more internal services such as the accountability and the laboratory. The largest difference is found with the comparison of external supervisions. Employees in Nyamasheke are 100% aware of the items which are inspected during the external supervisions and they state that external supervisions occur on a regular basis. The quality assurance program in place in Nyamasheke does indeed visit the health centres every three months according to a tight schedule. In Musanze such schedule is not in place and probably quality indicators as used in Nyamasheke miss as well. Resulting in less structured visits. Respondents in Musanze support this assumption, 18,2% of the respondents does not know which aspects of their service are inspected and 42,4% of the respondents thinks there is no regular external supervision, compared to 1 respondent in Nyamasheke who states that his service is not regularly supervised by external experts.

If we compare the quality of feedback differences can be seen as well, 11, 3% of the respondents in Musanze replied that there is not sufficient feed back after supervision, whereas in Nyamasheke 7,7% of the respondents stated that feedback was insufficient. The sample is too small to state that this indicates a 46% difference, however it does indicate that follow-up on supervision in Nyamasheke is probably better organized. The fact that 24,1% of the respondents in Musanze

answered that their skills had not improved under the influence of supervision is compared to the statistics from Nyamasheke relatively high. Only one respondent in Nyamasheke stated that he had not learned from the supervisions, 3,3% of the sample. These figures indicate that supervision is used more effectively in the PBF district of Nyamasheke as a tool to train and improve the skills of personnel. The awareness of items and the regularity of supervision leads to an increased feeling of responsibility to do a good job, whether in Musanze employees are less affected by supervision and control. The advantage of a higher feeling of responsibility is that it implicitly increases motivation of staff and creates the circumstances for creative solutions and patient oriented behavior.

8. **Confounding factors**

In chapter 3.2 the accuracy of output was discussed. The confounding factors and their influence will be discussed in this chapter. PBF can have multiple negative effects on the output of a health centre, the source for the seriousness for threats to the lies with the ethics and management of the health centre. Threats come with the prospect of extra funding and the pressure of performance. Rewarding performance with a significant amount of funds brings risks. If health centres recognize the threats and deal with these adequately it pleases for the quality of management and performance.. To evaluate how PBF is influencing performance of health centres the risks and an estimate of their influence will be defined in this section. Indicators are formulated in the same manner as with the positive effects of PBF. Approaches and circumstances which can reduce the risk of a threat are given as well. If the circumstances are favourable or approaches to reduce the chance of occurrence are applied, we can assume that a certain performance risk is less likely to have a significant impact on the accuracy of output. Simultaneously differences in prevention and covering of performance risks in health centres indicates increased levels of responsibility and awareness of risks. Corruption, wrong priorities (money over quality) and poor administrations are risks which apply to all institutes in everywhere in the world. Having the chances of such mistakes minimalized is directly affecting the quality of output. Differences in methods applied to reduce such mistakes are indicators for differences in management. If a health centre fails to recognize the necessity of controlling these threats, it misses an opportunity to improve performances. The threats for inconvenient effects of PBF are given below:

- A.) Inflated records for the remunerated activities in PBF health centres.
 - > Prevention: Verification and confirmation of patient records
 - > Indicator: Decrease in number of unconfirmed patients.

- B.) Negative effects to activities which are not remunerated, items not implicated in the performance indicators risk being neglected in favour of remunerate activities.
 - > Prevention: Include not remunerated activities in the Quality Assurance
 - > Indicator: Amount of services not remunerated
 - > Indicator: Which service has the worst capacity problems?

- C.) The quality of activities is neglected in favour of quantity
 - > Prevention: Quality Assurance should have a sufficiently large effect on the primes
 - > Indicator: Evolution of patient satisfaction and suggestions since Base Line study
 - > Indicator: Evolution of quality scores since introduction of Quality Assurance

- D.) Delivering the remunerated activities in spite of insufficient capacity, causing health risks such as poor diagnosis or incomplete services and treatment.
 - > Prevention: Identify capacity bottlenecks in the production process of

- > Indicator: remunerated activities
- > Indicator: Low number of qualified personnel per inhabitant
- > Indicator: Percentage of money invested in equipment and maintenance

8.1 threats in detail

Ad A.

Community Based Organizations were contracted to hold questionnaires among the patients. This initiative comes from Cordaid and the questionnaires were funded by Cordaid as well. In the district of Musanze similar mechanisms to verify performance are not in place. In Nyamasheke the CBO's regularly verify a random set of patient records for a Health centre. The patients are visited to confirm their existence, if the patient exists the CBO interviews him/her to get information on the quality of the service received, patient satisfaction, general suggestions and the type and cost of the service received. These Community Based verification proved to be a very useful instrument in decreasing the number of 'ghost patients'.

Average patient confirmation 3 rd quarter	2003	2004	2005	2006
Percentage of patients confirmed	74,1%	98,0%	98,8%	99,6%

The indicator shows that the preventative measure was indeed necessary and successful, unconfirmed patients have been reduced from 25,9% to 0,4% within 4 years. In Musanze incentives are not based on the number of patients treated at a service and thus the threat of inflated records is lower, however performance evaluations and poor administration might cause health centres to provide inaccurate results. As long as health centres are not rewarded for quantitative output the cost of mistakes are relatively low compared to the costs of verifying patient records. With other more urging bottlenecks existing in Musanze the absence of a verification mechanism does not provide a lot of information for differences in management.

Ad B.

In Nyamasheke all external services were remunerated in the Package of Minimum Activities, PMA. If this would not have been the case, a serious threat would be that health centres shift their investments to the services which do get remunerated. In Nyamasheke no indicators of performance for internal services such as the laboratory and the accountancy were used. This to prevent hard to verify records being at the basis of incentives, which could easily result in inflated records. If there would be a shift of focus and care to the PMA services in disfavor of the internal services, we would expect to see greater capacity problems at the unremunerated internal services in the PBF district than in the control district. In the control district of Musanze there is no difference in rewards for internal or external services. The table below provides figures on the perceived capacity constraints for internal and external services. The figures for Musanze can be used as a 'baseline' to compare the percentage of constraints of external services with the internal services. The figures show that in Musanze a 37,5 % percentage of constraints identified by the HC Chiefs are for the internal services against 62,5% for external services. In Nyamasheke this proportion is 87,5% against 0% for the internal services. Clearly these figures give no reason to assume that in Nyamasheke resources are purposely allocated to remunerated services. The perceived bottlenecks are related to availability of qualified personnel and the lack of necessary equipment. Thus the absence of such constraints in Nyamasheke shows that managers in Nyamasheke did not hesitate to invest in the equipment and training of personnel for internal services despite the fact that they are not remunerated. Figures for the constraints as identified by the personnel of health centres in both districts support the observation. In Nyamasheke only 1 respondent stated that the accountancy services has the worst capacity problems of all services in the health centre, whereas in Musanze 15,2% of the respondents identified the internal services to be most handicapped by lack of equipment and trainings for personnel.

Indicators	Nyamasheke		Musanze		Difference: Chiefs	Personnel
	HC chiefs	Personnel	HC chiefs	Personnel		
External services	87,5%	75,90%	62,50%	72,7%	40,0%	4,4%
Laboratory	0,0%	0,0%	12,50%	6,1%	-100,0%	-100,0%
Accountancy	0,0%	3,4%	25,00%	9,1%	n.a.	n.a.
Others	12,5%	20,7%	0,00%	12,1%	n.a.	70,8%
Total	100,0%	100,0%	100,0%	100,0%		
% of HC chiefs stating there are enough materials	25,0%		12,50%		100,0%	

The threat of the risk could be further diminished by including the evaluation of internal services in the quality assurance supervision. So the quantity is not rewarded, which could easily get inflated, but the quality is. However the process of defining the right indicators for performance of health centres is long and complex. Since Cordaid Rwanda put the responsibility of assessing performance of health centres with the health district, properly verifying the PMA has become main priority. In the future it could be investigated if the extra costs of verifying the quality of unremunerated services weighs against the possible benefits. For health centres the statistics from this field study do not indicate a great risk for mistakes. It is advisable to research the risks for complexer institutes such as health district hospitals, as those institutes provide more unremunerated services.

Ad C.

Patient satisfaction shows a slight decrease since 2005 which could indicate a shift in focus from quality to quantity however this figure should be seen in relationship with the scores on quality assurance since 2003.

Average patient satisfaction 3 rd quarter	2003	2004	2005	2006
Patient satisfaction	95%	97%	93%	87%

Over the same period, 2003 until 2005, Cordaid Rwanda remunerated health centers with 90% higher primes for performance. These primes were based pure on quantity and unfortunately scores for quality were not available. In further studies this could be investigated how health centres scored for the quality assurance and how this score developed from 2003 to 2006. A specific part of PBF which is still in development is the method of combining qualitative scores with quantitative scores. In the system now used health centres are required to score a certain level of quality and if they score below this level they receive less funds. The system is not working optimally as in some cases health centres cannot help the lower scores due to circumstances such as the lack of electricity and water or the absence of equipment in smaller HC's. The punishment can have a reverse effect and instead of stimulating for improvement take away vital financial resources. However, the effect of quality assurance has to be above a critical level to prevent health centers to focus purely on quantitative aspects of providing services. Which could bring unnecessary risks for patients. The current system seems to work as health workers indicate they do improve their skills, they are aware of the elements in their work which are supervised and they are motivated to improve the quality of their services. However, the system could be balanced more, maybe in the form of bonuses for excellent performance instead of penalties with non-performance. Based on specific circumstances quality assurance can also choose to actively invest in certain problems instead of maintaining a black-box approach. The later might prove to be a more direct and effective approach or it might prove to conflict with the personnel's own creativity.

Ad D.

The table from chapter 6 shows that the services with the highest risk of overcharging with work and loss of quality are the services of the curative consultation and the maternity. Research to the evolution of professional quality at the external consultation and at the maternity service could provide an improved insight in the probability of the risks for these services as they are now

identified to be at a 'critical' point of their capacity. For the health service of maternity risks lie in the lack of means of transportation. When a complication occurs mothers need to be treated at the health district hospital, without transportation this often means that patients have to walk to the health district hospitals, a trip which can take days. Mothers arrive too late at the hospital and often death births are the result. Health risks exist for the lack of current water as well. Without current water risks of infections are increased resulting in increased morbidity for mothers. Absence of a delivery table complicates functioning of the maternity service severely. Serious risks exist that patients are treated at the maternity service without sufficient capacity to treat them optimally. Investments are needed to cope with the high number of patients treated at the curative consultation as well. In both districts this service is identified as being the service where pressure of work is highest. Increasing utilization without extra investments in the consultation service causes patient satisfaction to decline as waiting time increases which might lead to a distrust of the institutional healthcare.

Indicators	Nyamasheke		Musanze	
	HC chiefs	Personnel	HC chiefs	Personnel
Curative consultation	37,5%	48,3%	37,50%	57,6%
Maternity	37,5%	6,9%	12,50%	6,1%
Laboratorium	0,0%	0,0%	12,50%	9,1%
Pharmacie	0,0%	3,4%	0,00%	12,1%
HIV services	12,5%	13,8%	0,00%	3,0%
Vaccination	0,0%	3,4%	12,50%	3,0%
Comptability	0,0%	3,4%	25,00%	3,0%
Others	12,5%	20,7%	0,00%	6,1%

It is essential to investigate how budgets are applied to cope with the bottlenecks at the services of maternity and curative consultation, in case patients are not treated optimally at these services the population might consider traditional health methods in future cases. Health centers should be investing in the capacity of these services because serious risks exist.

9. Findings & recommendations

During my stay in Rwanda I've taken the effort to visit two commercial projects of Rwandan entrepreneurs. Both projects, a passion-fruit plantation and a cheese farm, showed how hard it can be to manage and motivate employees. At both projects the entrepreneurs were unable to visit the projects more often than two or three times a month. Often to find that the work they wanted to be done was not done. In one case the employee was financially involved in the project as a partner and despite the shortage of work and the risk of losing the job he was barely motivated to do a good job. At the cheese farm exactly the same situation appeared to exist. There are multiple reasons for disfunctioning of personnel, either the salary is insufficient to support the family and employees try to run multiple jobs or the methods used to manage personnel are inadequate. This experience made me realize that the concept of human resource management is extremely important in as well the commercial as the public sector. Just a salary and 'regular' supervision is not enough to get the work done. In the projects I've visited it should be possible to triple productivity levels of the personnel if they would be managed adequately. Because the 'base line' of motivation and productivity, without creative solutions to stimulate the workers, is so very low the gains from good management approaches are also very high.

The management of health workers is, as far as my experience goes, quite similar, with only the supervision aspect of Human Resource Management, the HRM strategies in Rwanda will be limited to verification & punishment. The performance contract offers a tool to complement the supervision and verification aspect with a sensible 'prime' instead of a discouraging punishment. In the

questionnaires it became apparent that the Rwandan health workers are motivated in the first place by the salaries and primes. However, motivation and productivity can be increased further by the complementation of other strategies as well. Strategies which in my observation are largely depending on the competence of the health centre chief at the moment. Such as the availability and encouragement of trainings, involvement in decision making, good working conditions and 'good' treatment of the personnel. Good treatment of the personnel means that there is a listening ear for their problems, small activities to show appreciation for their efforts and a certain level of 'equity' among personnel. During my visits to health centres I noted that inequality among personnel can be large as well as on salary levels as in the 'affection' for their service. Increasing the basic working conditions to a base level set for the whole country would also be a great step forward in increasing motivation, productivity and quality levels of the health services.

9.1 Observations from the comparison

During the field study it became quickly apparent that the comparability of both districts is severely biased. Data for patient satisfaction, output of health centres and the financing for health per capita for the district are unavailable. Historically the both districts differ as well. Cyangugu suffered from raids by rebels hiding in refugee camps in the Democratic Republic of Congo until 1997. In 1998 Cordaid came to the district and began delivering emergency relief. Cordaid has been very active in Cyangugu and due to encouraging results from the Performance Based Funding experience have been spending millions in the region on the development of the health system. Musanze lies in the north of the country, a politically sensitive region because in this area conflicts were the heaviest in Rwanda for over years. Because the region is still very Hutu-minded rebels kept causing for unrest until the late 90's. As far as I know there have been no large NGO's or big projects investing in the region and if they did they could not have started before 2000. As a result the district of Musanze is still behind in development, money has been invested in infrastructure but mainly for big routes to the Mountain Gorilla's in the north and luxurious lodges for tourists.

In more concrete terms this difference in 'baseline' is shown with the primes received by health centres in both districts and the average salary levels. The base salary levels in Nyamasheke are 27% higher than in Musanze and despite the use of primes to top up salaries in Musanze the total average remuneration for health workers in Musanze is 9,7% lower. The variance in salaries in Musanze is significantly greater as well, few employees are paid by the government and those who are not paid by either the government or an international project receive 60% less salary. The bonuses which are paid to both districts are significantly different. Musanze is officially a control district which holds little value because the government is supposed to pay both districts the same amount of primes. An explanation for the large differences in primes, Nyamasheke receives on average 1.300.000Fr (1.805€) versus 560 000Fr (777€) for Musanze per HC, can lie in the manner of determining primes. In Nyamasheke primes are directly based on qualitative and quantitative performances whereas in Musanze primes are given, probably based on the average of all primes of all contracted health centres. Performance is partially based on the availability of cash resources to attract qualified personnel, renew equipment and invest in infrastructure. In Nyamasheke this has been working as a snowball and performance has gradually increased resulting in a snowball effect of funds -> performance -> funds. As Nyamasheke has been experimenting with PBF since the beginning PBF was introduced in Rwanda, it can be expected that the snowball of results / incentives has increased to above average performance levels.

9.1.1 main differences

The primary difference between the health centres in both districts is the access to financial means. Regarding the constraints as identified in chapter 5 it can be concluded that at the basis of differences in utilization and quality there is the lack of equipment, buildings and personnel. The average budgets of both districts indicate the constraints are caused in the first place due to a lack of financial means. The small budgets and the allocation of primes to salaries only cause it to be very difficult to deal with inadequate inventories and poor infrastructure. A lack of professionalism and

supervision compared to the health centres of Nyamasheke cannot be excluded, however the needs and bottlenecks are still of such basic levels that no strong statements on these aspects can be made.

With reverse thinking it can also be said that compared to Musanze, health centres in Nyamasheke were more capable of creating sources of income. The prime cause for financial abilities to invest, but to gain the prime the health centres have to reach the population. Ignorance of the population scored 20% of all points distributed by HC chiefs in Nyamasheke, making it the most important constraint, whereas in Musanze none of the HC chiefs identified the ignorance of the population as a constraint to the functioning of their health centre. Strategies applied to reach the population do not differ much, in both districts the same strategies are applied, however the intensity and the effectiveness do differ. Health centres in Nyamasheke invest time and money in the advanced strategies to actively sensitize the population. The household visits and the vaccination posts are costly services but they do increase awareness of the benefits of institutional health care. Another difference in approaching the patients is the sub contracting of dispensaries. In Nyamasheke half of the health centres have subcontracted dispensaries to boost their utilization rates. In Musanze none of the health centres had itself engaged in similar cooperations with private dispensaries. And last but not least, the influence of the Community Based Micro Insurances. In both districts health centres identified the micro insurance as a very significant factor for their utilization rates, financial accessibility of their services has greatly increased as the indigents get the membership of the insurance covered by equity funds and the costs of services are reduced up to 75% of the normal cost depending on the type of insurance. However, again ignorance is an important factor in the participation rate for insurances. The government has made the CBMI obligatory but still people need to be sensitized and the insurances have to be promoted during large community gatherings such as Umuganda and Gacaca. If health centres put effort in these activities and actively guide citizens through the process of becoming a member of a CBMI they can increase the participation rates for the district and indirectly improve their own utilization rates for increased primes.

To conclude this section, it's all about the money. But the question is, is it because health centres in the PBF district are more capable at acquiring funds or is it because external parties such NGO's and the government allocate funds unequally? It is impossible to give a clear answer, as the health centres in Nyamasheke profit from external input, but they do show a more active attitude towards sensitizing the population. The government has contracted 120% more health workers in Nyamasheke than in Musanze and prime levels are 130% higher in Nyamasheke, besides Cordaid spends at least 750 000€ every year in the west province of Rwanda. Although Cordaid's spendings cannot be seen as direct investments in the region, as the development of the PBF technique costs a lot of overhead which have an added value for other projects all over the world. More studies are necessary to compare quality of health services, the influence of Community Based Micro Insurances and how Health centres react on these, and the exact use of budgets for more provinces.

9.2 External supervision and technical assistance

The team of experts of Cordaid Rwanda has been assisting on multiple levels in the health system to improve the functioning of the district, the supervision by health district hospitals and the functioning of health centres. Meanwhile Cordaid Rwanda emphasized structural verification of performance and administration. The effects are that inflated records were drastically reduced, administration is more transparent than in Musanze and managers are more used to work with planning and control. Progress for services is evaluated more frequently than in Musanze and the awareness of bottlenecks gives the health centre managers the opportunity to deal with these timely and correctly. Personnel indicates that technical assistance is equally easy in both districts, however the supervisions and feed back in Nyamasheke are better. Staff in Nyamasheke states that they indeed learn and get trained by the supervision. The Quality Assurance by district hospitals exists in the traditional system as well, but due to the more specified indicators for quality and the organized feedback and visits effectiveness of the supervision by district hospitals has improved.

However, the districts complain that the supervision is costly and causes too much extra work. In theory the visits do not have to cost extra money, and if they do, there are results that it works as a training mechanism. In Musanze a similar mechanism is in place, however it is significantly less structured and is not as effective as it is in Nyamasheke in training staff.

To conclude, Performance Based Funding is a tool for supervision, following instructions and actively trying to improve quality standards is rewarded in Nyamasheke. Cordaid Rwanda has organized a more structured approach of Quality Assurance and the comparison study shows that it has effect. Supervision is positively affecting the quality of services more than in Musanze and the accountability of health centres in Nyamasheke has increased significantly. The main question here is whether it is worth the costs and effort. Regarding the results in Musanze I am inclined to say that it is better to use the quality assurance as optimally as possible, because the unstructured approach in Musanze costs money as well and has less effect as a tool to incrementally improve quality standards. However it could be evaluated what the effects would be if quality supervision is done 3 times a year instead of 4 times. It would reduce costs with 25% although overhead costs are larger per visit then. Another option could be to increase the span of control. Having one responsible team for every 150 000 citizens can prove to be very costly. Using specialized teams with the proper experience and equipment for a larger sample could prove to be a more cost-effective approach. The same holds for the team of Cordaid Rwanda, the costs of functioning are relatively large for the citizens who benefit. If experience builds Cordaid Rwanda could become more cost-effective operating for a larger group of health centres.

9.3 The added value of Performance Based Funding

The field study started with the question how performance based funding is influencing the quality of performance for health service providers. In previous chapters both districts were compared piece by piece to identify where differences lie and whereas these are caused by Performance Based Funding. The expectation was to see the largest differences in the strategies applied by health centres to reach the population and in motivation levels of personnel. However, during this field study the differences in motivation appeared to be marginal and mainly located in the constraints at work. Indeed personnel responded to get the most motivation from primes and salaries and respondents replied that there is indeed a relation between their performance and their remuneration. But despite these facts the differences are mainly caused by an overcharge with work and a lack of equipment to do a good job. Strategies applied to reach the population proved to be more frequent and intense instead of more creative. The most important difference between the two districts appears to be the access to financial means and the lack of structural supervision and training. The difference in financial resources raises the question whether this is because of better health centre management and the snowball effect of performance and primes or if it is due to external investments. It would be interesting to see what will happen if health centres in Musanze are allowed to work with a larger budget, comparable to the budgets of health centres in Nyamasheke. Will they deal with the most urging capacity problems or will they spend it on salaries? How does the lack of supervision affect risks the misuse of extra budget? Having a budget and spending a budget are two different things and further research on this topic would be very interesting. More can be said on the influences of PBF if the black box, of how decisions are made and budget is allocated, is opened

With the uncertainty of the exact effects of Performance Based Funding the question is whether similar results can be achieved in a more cost-effective manner. From the observations and data it seems that the effort put in supervision and verification of output is justified. Although as stated in paragraph 9.2 it is wise to investigate if there are feasible options to increase cost-effectiveness of quality assurance and CBO questionnaires. The contract part of PBF offers a tool to motivate personnel, strengthen the training effect of supervision, and simultaneously provides an extra source of income for health centres than normal user fees and direct government spendings. If the

overhead costs of applying the PBF approach are sufficiently spread over a larger population PBF has many advantages over the standard input based financing. Health centres in Nyamasheke score on all indicators better or at least equal compared to Musanze, some of the effects caused by the larger budgets and better starting conditions (qualified personnel, infrastructure, equipment, salary levels) and others by a structured supervision and the stimulating prospect of the prizes. The technology of Performance Based Funding is an approach not yet optimally cost-effective. Further research in budget use of health centres, a more cost-effective way of quality assurance and a more detailed study on motivation of health workers will allow further development of Performance Based Funding. Performance Based Funding helped reforming the health system in Cyangugu, contracting has proved to be a useful technique to set performance targets for health centres and offered health service providers an opportunity to increase their financial capabilities. As a result health centres in Nyamasheke now out-perform health centres in Musanze on all aspects of health centre performance. However, Performance Based Funding needs further development and further research to fulfil its pledge.

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