Centre de Recherche en Santé de Nouna
Burkina Faso
As most of the Sub Saharan African Health Research Centers, CRSN has undergone profound changes over the past decades, from a local centre, cooperating with a single Northern partner, to a national center with diverse partners in the North, and, equally important, strong partnerships in the South. North and South still have to go a long way to reduce the imbalance in research between developing and industrialized countries. This process demands rethinking and courage on all sides, the research partners of the North and the South and the funding institutions. We invite you to join us on this road.
MAIN OBJECTIVES OF THE RESEARCH CENTER

To conduct community-based and clinical research

To develop Nouna district hospital and CRSN into a community and clinical trial site which meets international standards

To collaborate within the DSS network on technical strengthening, methodology development and population based research

To conduct multidisciplinary health research for health policy planning

To train health staff

To achieve financial autonomy through diversification of research partnership and funding

RESEARCH ACTIVITIES

- **Biomedical Research** – parasitology (malaria), microbiology (epidemic meningitis), virology (HIV/AIDS), entomology

- **Clinical Research** – on infectious diseases, in particular malaria, bacterial meningitis and HIV/AIDS. Clinical malaria trials, malaria case management, reproductive health

- **Health System Research** – treatment seeking behaviour, quality of care, health financing, translational research, health and equity, health and migration, and poverty reduction

- **Environment and Health**

RESEARCH COOPERATION

This graph illustrates the strong partnership between the CRSN, the Ministry of Health of Burkina Faso, the University of Ougadougou and the University of Heidelberg. The CRSN is a member of international networks such as INDEPTH. Currently, the German Research Foundation (Deutsche Forschungsgemeinschaft [DFG]) is funding a major component of research activities in Nouna through a collaborative research grant (Sonderforschungs-Bereich [SFB]). This is supplemented by a core grant of the Land Baden-Württemberg. Additional important grants are from the Volkswagen Foundation and the European Union.
The Centre is part of the INDEPTH NETWORK, an international network of 38 field sites in developing countries with continuous demographic evaluation of populations and their health.

**INDEPTH Field Sites Worldwide in 2007**

INDEPTH NETWORK includes

- 38 sites
- 19 countries
- a population of >1,600,000 under long term follow-up

**Board of Trustees**

<table>
<thead>
<tr>
<th>Board of Trustees</th>
<th>Country</th>
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<td>Ghana</td>
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<tr>
<td>Dr. S. Hirve, Vice Chair</td>
<td>India</td>
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<td>Dr. A. Razzaque</td>
<td>Bangladesh</td>
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<td>Dr. H. Mahinda</td>
<td>Tanzania</td>
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<td>Guinea-Bissau</td>
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<td>Dr. S. Punpueng</td>
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<td>Dr. T. Williams</td>
<td>Kenya</td>
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<tr>
<td>Dr. R. Rabinovich</td>
<td>USA</td>
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<td>Dr. C. Mbacké</td>
<td>Senegal</td>
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**Executive Director**

Osman A. Sankoh

**CAPACITY BUILDING**

For formal training, intensive efforts have been made to enroll staff of the Centre in post-graduate training programs (MSc or PhD) at the University of Heidelberg/Germany, the University of Wits/South Africa, INED/Université de Paris XII/France. CRSN staff is currently enrolled in formal post-graduate training in

- biochemistry
- molecular entomology
- molecular parasitology
- epidemiology
- public health
- demography

on the job training and short courses are offered in

- research proposal writing
- epidemiology statistical analysis
- lab techniques
- information technology
As most of the Sub-Saharan African Health Research Centres, CRSN has undergone profound changes over the past decades, from a local centre, cooperating with a single Northern partner (University of Heidelberg), to a national centre with diverse partners in the North, and, equally important, strong partnerships in the South.

Nouna is successfully evolving by diversifying partnerships and funding. Heidelberg University continues to feel engaged with this partnership and is proud to facilitate this important process.

North and South still have a long way to go to reduce the imbalance in research between developing and industrialized countries. At present the international research community is going through a demanding learning process. One of the results of this process is the growing awareness that results from scientific activities should not be the only criteria by which success is measured. The interaction between scientists and the public as well as between research and every day life, is equally important.

The University of Heidelberg and CRSN foster the idea of one, world-wide scientific community that meets the needs of the communities in which the research is conducted and contributes to world-wide sustainable development.

CRSN and the University of Heidelberg have adopted the 11 principles of Research Partnerships with Developing Countries. They invite partners from around the world to join in:

### Principles of Research Partnerships

1. Decide on the objectives together
2. Built up mutual trust
3. Share information; develop networks
4. Share responsibility
5. Create transparency
6. Monitor and evaluate collaboration
7. Disseminate the results
8. Apply the results
9. Share profits equitably
10. Increase research capacity
11. Build on the achievements

To guarantee a continuous learning and planning process, research steering committees, both in Nouna and in Heidelberg, were established. The two steering committees have regular individual and joint meetings.

To improve communication, an interactive homepage has been established which allows symmetrical access to information and steering tools. This is an excellent way for planning and conducting joint research projects (time plan, staffing, travel plans, budget) and training.

Clinical research is particularly demanding with regard to fulfilling the principles of true partnership. Patients rights and individual patient’s health benefits, appropriateness of research for the community as a whole, standards of conduct of clinical research, are all issues to be addressed and solved.

Our ultimate goal of clinical research is the alleviation of sufferance and the promotion of a healthy life. Since we started to intensify clinical research in Nouna, we have regular meetings and follow-up workshops. Our meetings and planning is guided by working towards a clinical trial platform in Nouna which meets international standards. At the same time, we carefully watch over appropriate health benefits for the individuals and the community. These processes demand rethinking and courage from the research partners of the North and the South as well as from funding institutions.


NHRC, Navrongo / Ghana, 2005
CRSN, Nouna / Burkina Faso, 2006
North - South partnership with a strong South - South component is fostered by the Volkswagen Foundation Program “Knowledge for tomorrow - cooperative research in Sub-Saharan Africa”: Workshop of the project “Meningococcal meningitis in Sub-Saharan Africa: from the understanding of the dynamics of colonization and disease patterns to improved control”. Project partners from Navrongo, Nouna, Basle, Heidelberg and representatives of the Volkswagen Foundation.
RESEARCH STEERING COMMITTEE
NOUNA

Members

Ali Si
O. Millogo
S. Simboro
C. Bagaguna
M. Yé
B. Coulibaly
A. Zoungrana
M. Sanon
C. Ouedraogo

Coordination

RESEARCH STEERING COMMITTEE
HEIDELBERG

Members

T. Junghanss
S. Borrmann
M. Sarker
M. Kaur
J. Kaur
A. Kapaun
O. Müller
To assure good resource management, the CRSN management committee was created in 2000 on recommendation of the Ministry of Health to review and approve the overall CRSN program, research projects, budgets and financial management.

Research projects of the CRSN are approved at two levels:

- the Local Ethics Committee (since November 2001) composed of scientists and representatives of the local community and
- the National Ethics Committee (since May 2003)

### Members of the Steering Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Level</th>
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<tbody>
<tr>
<td>Director of Research and Planning of the Ministry of Health</td>
<td>National</td>
</tr>
<tr>
<td>Administrative and Financial Director of the Ministry of Health</td>
<td>National</td>
</tr>
<tr>
<td>Director of Human Resources of the Ministry of Health</td>
<td>National</td>
</tr>
<tr>
<td>Regional Health Director of Boucle du Mouhoun</td>
<td>Regional</td>
</tr>
<tr>
<td>Medical District Officer of Nouna District</td>
<td>Local</td>
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<tr>
<td>High Commissioner of Nouna Province</td>
<td>Local</td>
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Steering Committee members and CRSN research team during the 2007 meeting in Nouna.

Members of the Local Ethics Committee July 2007.
The CRSN has an international Scientific Advisory Board (SAB) created in 2000 following the decision of the Ministry of Health (MoH). Meetings are annually with the following objectives:

- To direct the CRSN research project according to the national research priorities;
- To assess the quality of research projects and programs and provide recommendations on strategic planning;
- To increase the capacity of the CRSN by sharing institutional strengths among research partners;
- To provide guidance for training programs

### Member of the Scientific Advisory Board | Institution/Country
--- | ---
Prof. Gilles BIBEAU, Chair | Anthropologue, Faculté des Etudes Supérieures, Université de Montréal, Canada
Dr. Mamadou Souncalo TRAORE | Médecin épidémiologiste, DER de Santé Publique, Faculté de Médecine, de Pharmacie et d’Odontostomatologie Université du Mali, Bamako, Mali
Prof. Mamadou SAWADOGO | Pharmacien Biochimiste, Doyen de l’ UFR des Sciences de la Santé de l’Université de Ouagadougou, Burkina Faso
Dr. Nicola MEDA | Médecin épidémiologiste, UFR des Sciences de la Santé de l’Université de Ouagadougou, Burkina Faso
Prof. Jean Remy Davée Guimaraes | Institut de Biophysique Carlos Chagas Filho, Université Fédérale de Rio de Janeiro, Brésil
Dr. Sodiomon Bienvenu SIRIMA | Médecin épidémiologiste, Centre National de Recherche et de Formation sur le Paludisme, Ouagadougou, Burkina Faso
Dr. André SOUBEIGA | Socio-Anthropologue UFR Sciences Humaine l’Université de Ouagadougou, Burkina Faso

Infectious diseases are a leading cause of death, accounting for one third of the estimated 54 million annual deaths worldwide. Sub-Saharan Africa remains the region most affected with nearly half of all infectious disease-caused deaths worldwide. Malaria, tuberculosis, and HIV/AIDS account for the majority of deaths in developing countries now and in the years to come. In the recent past, political will and social support are finally materializing to mount an effective fight against the deadly epidemics. It is the aim of SFB544 „Control of Tropical Infectious Disease“ to contribute to this fight on all levels. This SFB constitutes a unique network that combines basic research projects identifying drug targets and testing compounds with clinical research projects implementing new therapies through controlled trials and with public health projects, making sure that those interventions reach the people in need. The majority of SFB544 projects work on malaria, while three projects each address trypanosomatids and HIV/AIDS, and a new project targets Dengue fever, today the most common arthropod-borne viral disease worldwide. The ambitious research program of SFB544 is only possible through our long-standing and very fruitful collaboration with the Centre de Recherche en Santé de Nouna (CRSN) in Nouna, Burkina Faso.

In the current period, this has been extended to Nouna district hospital which is transforming into a clinical research centre qualified for international phase II/III drug and vaccination trials. The current funding period has also seen extended collaborations with other clinical, laboratory and public health research partners, in particular linking research at Navrongo (Ghana) and at the Centre Hopitalier Universitaire in Ouagadougou with the CRSN in the context of South-South collaborations. SFB544 and the associated research groups are excited and pleased with these developments and look forward to a successful continuation of our very fruitful collaboration with the CRSN and its partners.
In developing countries, Demographic Surveillance Systems (DSS) provide an excellent basis for research in epidemiology, clinical sciences, health economics, and social sciences, and for health reporting. The DSS site of the CRSN covers an area of 1.775 km² with 76,000 inhabitants in a rural and semi-urban environment.

On the basis of the DSS data, a number of regionally and scientifically important epidemiological studies have been carried out, such as risk factors for childhood mortality in Burkina Faso, seasonal patterns of mortality in the Nouna DSS, and mapping of childhood mortality.

The data collected and analyzed in the DSS Nouna is contributing to the larger pool of the INDEPTH network of which CRSN is a partner.

The District Hospital of Nouna was founded by the physician Yalgado Ouedraogo, the Catholic Mission, and the German Technical Cooperation (GTZ). It is one of the 63 district hospitals in Burkina Faso. The hospital serves as the referral center for the 27 peripheral health posts (CSPS) in the Nouna Health District and covers a population of about 300,000 inhabitants.

The units of the hospital are Surgery, Internal Medicine, Paediatrics, Maternity, Ophthalmology, ENT, Dental Care, Psychiatry, Dermatology, including tuberculosis and leprosy, Emergency Care, Radiology, Occupational Health, and Pharmacy. The hospital has 88 beds. In 2007, around 1700 inpatients and 3400 outpatients have been attended to. Additionally, nearly 1500 pupils and public servants have been looked after in the Occupational Health Unit.
Centre de Recherche en Santé de Nouna

**Staff**

**Direction**

- M. Sanon
- I. Téyi
- K. Djim

**Service Administratif et Financier**

- C. Goundrago
- M. Sanon
- V. Coulibaly
- N. Divo

**Service des Enquêtes et des Sondages**

- M. Sanon
- V. Coulibaly
- J. Dumbé

**Service Gestion de l’Information**

- C. Bagagman
- S. Diarra
- Z. Drabo
- S. Djë

**Service de Laboratoire**

- B. Coulibaly
- M. Sanon

**Service Recherche et Formation**

- M. Yé

**Scientists**

- 1 Biologist
- 1 Public Health Specialist
- 1 Pharmacist
- 1 Demographer
- 1 Health Economist
- 6 Physicians
- 1 Sociologist
- 1 Anthropologist
- 1 Computer Scientist

**Scientific Support Staff**

- 1 Data manager assistant
- 2 Data Entry Supervisor
- 5 Data Entry Clerks
- 2 Archivists
- 1 GIS Specialist, Cartographer
- 6 Lab Technicians
- 1 Entomological Lab technician
- 4 Assistants of the Lab Tech.
- 14 Interviewers
- 2 Male nurses
- 1 Social Assistant

**Management Support Staff**

- 1 Director
- 1 Secretary
- 1 Accountant
- 2 Assistant accountants
- 3 Drivers-mechanics
- 3 Watchmen

Temporary staff is hired for specific studies.
LABORATORY
at Nouna District Hospital

The new laboratory of CRSN was integrated into the District Hospital in 2005. The research laboratory thus creates a spin off into the community through training of hospital technicians and provision of laboratory services to patients. Laboratory services offered to in- and outpatients include routine diagnostic tests in hematology, biochemistry, microbiology, serology and parasitology. Patients enrolled in national health programs and research projects are offered specific tests, e.g. voluntary HIV testing, CD4 count for HIV infected patients on treatment.

The CRSN laboratory has become the leading PCR laboratory for HIV detection in new born infants from HIV infected mothers. The microbiology unit is foreseen as a regional reference laboratory for meningitis surveillance.

Special equipment: ELISA reader (computer assisted), cell counter (Sysmex and Becton Coulter), FACS counter, FACS Scan, laminar flow bench, spectrophotometry, PCR (thermocycler, gel camera etc), deep freezer (-80°C), and high quality microscopes.

CLINICAL RESEARCH
at Nouna District Hospital

CRSN and Nouna district hospital are accumulating an impressive record of community based and clinical trials.

Clinical research activities started in 1999 with a large WHO-funded community-based randomized controlled trial (RCT) on the effects of zinc supplementation on malaria morbidity. The zinc trial was followed by a RCT on the long-term effects of insecticide-treated mosquito nets (ITN) on the malaria morbidity and mortality and on the overall mortality in children. Several malaria drug trials have been carried out recently (methylene blue and azithromycin combination therapies). With increasing experience with phase II/III clinical trials, CRSN and Nouna District Hospital are developing into a site which meets international standards.

To improve and standardize individual patient care, clinical management procedures are being investigated, such as diagnosis and treatment of children with impaired consciousness with particular emphasis on complicated malaria and bacterial meningitis. In the area of HIV, determinants of mother-to-child transmission are investigated. High standards of clinical data documentation and management and laboratory facilities are a prerequisite for clinical research and for fulfilling the requirements of a clinical trial site. CRSN and Nouna, together with partners from Heidelberg University Hospital, have substantially invested in this field in recent years.
The Nouna Health District and the CRSN share the mission to improve the health of the community by offering affordable health care and by translating research results into clinical practice. The Nouna Health District and the CRSN are strongly interacting at an institutional level. The Nouna District Hospital, (Centre medical avec antenne chirurgical de Nouna [CMA]), has benefited from sustained support provided by CRSN. Currently, six medical doctors, two biologists, three laboratory technicians and a paediatric nurse employed by the CRSN support the clinical services of the hospital. Furthermore, a new emergency department was built and an ultrasound unit established, again with the aim to improve the clinical research infrastructure and the quality of care at the same time. CRSN and the district hospital are working together with the Northern research partners towards developing the district hospital into a clinical trial site which meets international standards.

Health System Research (HSR) is an important part of CRSN research and supports the decision-making process at all levels of the health system. HSR addresses cultural beliefs influencing health-seeking and health-promotion and its socio-economic, political, and physical context.

Health insurance for universal coverage

Among the barriers preventing sick people from seeking care, the cost of health care has consistently been shown to be crucial. Community-based health insurance (CHI) schemes have the potential to lower the financial barrier and improve access to health care, thereby contributing to better health outcomes. A joint research project of the CRSN and the University of Heidelberg addresses this problem.

Quality of care

The state and development of quality of care delivered by health facilities in Nouna health district have been both, a policy and a research issue for the past 20 years. Quality of care has been a constant concern and it has been the focus of intense research efforts and interventions. It is an extremely difficult problem to tackle and is resistant to simple uni-dimensional solutions. While it is obvious that a basic level of facilities, infrastructure, equipment and consumables is necessary, it is not sufficient to improve the quality of care. The research challenge is to find new strategies to innovate existing institutional frameworks and to bridge the gap between health care providers and the communities they serve.

Improving maternal and child health care

Studies are carried out to address the health of vulnerable groups. Different approaches to improve immunization coverage for children are investigated. In the framework of maternal health care the community-effectiveness of insecticide-treated bed nets (ITN) is studied with various approaches (social marketing, combination with antenatal care service).

Ecosystem approach of health

Environmental aspects of health are increasingly recognized. The impact of climatic change and environmental factors on malaria transmission is currently being investigated.
FUNDING

Links to web-pages of the collaboration partners
- www.sfb544.de
- www.hd-nouna.org
- www.indepth-network.net
- www.primature.gov.bf
- www.worldbank.org
- www.eurunion.org
- www.who.int

Government of Burkina Faso
Ministerium für Forschung, Bildung und Kunst Baden-Württemberg, Germany
German Research Foundation
Volkswagen Foundation
European Union
Roll Back Malaria and TDR/WHO
Rockefeller Foundation
Union des Banques Suisses (UBS)

Core support
Competitive research grants

COOPERATING PARTNERS

National Institutions
- Centre Muraz (Projet IMMPACT)
- Centre National de Recherche et de Formation sur le Paludisme (CNRFP)
- Institut National des Sciences des Sociétés (INSS)
- Institut de Recherche sur le Développement (IRD)
- Institut National de la Statistique et de la Démographie (INSD)
- Ministère de l’Enseignement de Base et de l’Alphabétisation (MEBA)
- Programme National de Lutte contre le Paludisme (PNLP)
- Institut Supérieur des Sciences de Population (ISSP) (ex-UERD)
- UFR/SDS /Université de Ouagadougou
- Programme National de Prévention de la Transmission Mère-Enfant (PTME) du VHU/SIDA
- Direction Générale de la Météorologie
- Centre International de Formation en Recherche Action (CIFRA)

Regional and International Institutions
- International Network of field sites with continuous Demographic Evaluation of Populations and Their Health (INDEPTH Network)
- Institut National de Recherche en Santé Publique/ Mali
- University of Heidelberg / Germany
- Health System Trust, South Africa
- IHCAR-Karolinska Institute / Sweden
- Muhimbili University College of Health Sciences- Dar es Salaam/Tanzania
- Nuffield Institute for Health /UK
- University of Montréal / Canada
- Institut de Santé Publique de l’Université Makerere / Ouganda
- WHO/ TDR
- WHO / Gender and Reproductive Rights Unit (GRR), Department of Reproductive Health and Research
- Institut Universitaire des Etudes pour le Développement de Genève (IUED)/ Switzerland
- Swiss Tropical Institute/Basle/ Switzerland
- Pfizer
- Sanofi
2003


2004


2004


2005


malaria in young children of Burkina Faso. Malaria Journal 4: 46


Boehler T, von Au M, Klose N, Müller K, Coulibaly B, Nauwelaers F., Spengler
2007


(2007) Safety and efficacy of methylene blue combined with artesunate or amodiaquine for uncomplicated falciparum malaria: a randomized controlled trial from Burkina Faso. Tropical Medicine & International Health 12 (supplement 1): 101-102


