

Making malaria deaths easier to count

Autopsy for medical purposes is illegal in Rwanda, so it is difficult to know how many people die of a specific disease. But a change in the law expected this year has spurred researchers to establish Rwanda's first postmortem programme that would start by helping with one of the most difficult of diagnoses in children: cerebral malaria.

As the only Rwandan pathologist in his country, Dr Eugène Mutijima is unique in many ways. Not only does he provide much-needed diagnostic support to clinicians at hospitals in Rwanda – saving these institutions from spending scant funds on outsourcing abroad – but he is also unusual among African medical graduates in choosing to work in his home country after training in Europe.

If a new medical research bill is passed this year as expected, Mutijima may soon be helping doctors in his country diagnose cerebral malaria and ascertain how many children actually die of this, the severest form of malaria.

One of those doctors, Professor Cyprien Baribwira, from the Paediatrics Department at the University Hospital in Kigali, explained that this research project has a vital public health purpose. It will certainly improve treatment. “When one knows the causes of death, one can improve treatment. But when one does not know, one cannot,” Baribwira told the *Bulletin*.

Mutijima has been re-establishing the Pathology Laboratory in Butare, about 130 km from the Rwandan capital of Kigali, since returning to his native country last year following five years of specialist training at Belgium's Liège University.

In his laboratory, Mutijima, head of the Pathology Department at the University Hospital of Butare, analyses pathological specimens from people admitted to the country's two main public hospitals as well as all the private and some district public hospitals. But despite his training, Mutijima is unable to ascertain specific causes of death in many of these cases because under current law he cannot perform full autopsies in order to do this. (See Malaria

deaths are the hardest to count, *Bulletin of the World Health Organization* 2006; 84(3): 165-6.)

Cerebral malaria is responsible for many deaths among children in Rwanda and is fatal within days unless treated. But symptoms are ambiguous and resemble those of several other illnesses including bacterial meningitis, Mutijima explained.

The standard diagnostic test for malaria is a blood smear to detect the parasites. Some centres have rapid diagnostic test, but these do not differentiate between cerebral malaria and other causes of neurological syndromes in children who have incidental parasitaemia. “In many cases the only way to understand what happened to the children is by autopsy,” Mutijima said.

The only autopsies currently allowed in Rwanda are those mandated for legal purposes. However, Mutijima and his colleagues expect this situation to change when

a bill containing proposals to allow medical autopsies, is passed in coming months.

The new legislation, which will be unique among countries of Africa's Great Lakes region, would enable Mutijima, in collaboration with Liège University neuropathologist Dr Manuel Deprez in Belgium and paediatricians Baribwira and Dr Cwinya-ai Neniling in Rwanda, to start the country's first study of child deaths.

Their hope is that results from this work will help improve care for children with febrile encephalopathy of which *Plasmodium falciparum* malaria is a major cause.

The crux of the study, which is currently under discussion by the ethical review board in Rwanda, is to follow all children hospitalized with febrile encephalopathy. They plan to use their clinical and pathological findings to identify potential risk factors for poor prognosis and features that could improve diagnosis.

The first phase of the project, a large retrospective review of paediatric charts by Baribwira and Cwinya to identify the clinical profile of children admitted to hospital with febrile encephalopathy, is already under way. And once the law is changed, additional autopsy data will move the research forward by enabling the researchers to establish pathological correlates for their clinical findings.

Family consent is mandatory for medico-scientific autopsies such as these and sociocultural considerations

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Professor Cyprien Baribwira, from the Paediatrics Department at the University Hospital in Kigali.



Taking blood to diagnose malaria; blood smears do not specifically identify cerebral malaria as the cause of encephalopathy.

are key to gaining parents' trust for this work. This is especially true for autopsy, which is controversial in Rwanda because it recalls all-too-recent memories of mutilation during the 1994 genocide.

Baribwira, who was involved in drafting the medical research bill, said that as in other African countries parents do not want scars left on their children's faces. He added that other countries' experiences

show that relatives may be reluctant to wait the necessary four to six hours after death for an autopsy, preferring instead to hold the funeral as soon as possible.

According to Mutijima, these difficult social responses are reflected in their colleagues' mixed reactions to this project after it was presented at the annual Rwandan medical congress last September in Butare. "Some think that it will be impossible because of sociocultural considerations, but others have confidence in it. It is a big challenge," he said.

Baribwira believes that despite the cultural sensitivities, parents will respond to the chance of an accurate diagnosis through autopsy, and that this project will fulfil a great need in paediatric research in Rwanda. It is common for parents in rural areas to blame poisoning or supernatural causes

for their children's disease, he said. An accurate diagnosis is therefore important to "de-dramatize the situation" and to reinforce public health messages about prevention.

"I am convinced that autopsy in the context of a hospital with limited means of diagnosis is an important additional tool to help us meet our responsibilities to parents and patients," Baribwira said. "If we continue not to know what some of our

children die from, and assume that the facts we have are good, we will never be able to advance to save the other children," he added.

The research project has received a strong vote of support from Rwanda's minister of state for infectious diseases and AIDS, Dr Innocent Nyaruhirira. But Mutijima said that despite this recognition there are still problems finding funds to cover the cost of the equipment. "We need to establish the autopsy room, which is very expensive. We are trying to look for financial support from the Ministry of Health," Mutijima said.

The project will form the basis for Mutijima's doctoral thesis, but the wider goal is to establish the practice of autopsies in Rwanda and make an international clinico-pathological centre of reference in cerebral malaria. "It is

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Dr Eugène Mutijima, head of the Pathology Department at Butare's University Hospital.



WHO/Stephanie Hollyman

Malaria is the single biggest killer of children aged under five in sub-Saharan Africa.

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SAGE: request for nominations

The Strategic Advisory Group of Experts (SAGE) is the principal advisory group to WHO for vaccines and immunization. The World Health Organization is soliciting proposals for nominations for current and future vacancies on SAGE. The seat of a member from the European Region is shortly to become vacant. Nominations for this seat should be submitted by 30 April 2007. Other nominations for members from all regions are welcome at any time.

Instructions for nominations are available at: http://www.who.int/immunization/sage_nominations/en/index.html



WHO/FAHO

The female *Anopheles* mosquito acts as the vector for malaria. It carries malaria parasites after sucking infected blood from humans and can transfer these parasites to other humans when it bites them.