Serigne Magueye Gueye:

an agent for change

➜ Marc Beishon

After years of international declarations and pilot projects, Africa is starting to take control of its efforts to tackle cancer. At the helm is Serigne Gueye, professor of Urology at Senegal's Cheikh Anta Diop university and president of Africa's cancer research and training body AORTIC, which is now in a race against time to get cancer up the agenda of national governments and the African Union.

When people think of Africa's illness burden, the major communicable diseases such as malaria, tuberculosis, HIV/AIDS and others come to mind as the big killers and causes of chronic conditions. This perception has been outdated for years, if not decades, and it has hampered efforts to prepare the developing world for the explosion in non-communicable diseases such as cancer that we know is coming.

Cancer already kills more people than AIDS, malaria and tuberculosis combined, in all but the very poorest countries, and it is rising rapidly as progress is made in controlling infectious diseases, and people live longer and start adopting western lifestyles. But the world missed an opportunity to galvanise efforts to meet this challenge when it left cancer off the targets for the Millenium Development Goals – an omission that has only just begun to be redressed this May, with the United Nations General Assembly resolution on non-communicable diseases.

According to Serigne Gueye, president of the African Organisation for Research and Training in Cancer (AORTIC), and a urologist based in Dakar, Senegal, the most damaging omissions, however, have been not so much in the agendas of international organisations, but in Africa itself.

"The problem has been a lack of awareness of cancer among Africans and lack of action by governments, but it is also the case that international agencies have mostly lacked practical strategies for tackling cancer as the focus has been on communicable diseases.

"Cancer in Africa will become a huge problem in the next ten years or so as people live longer, while other diseases common in developed countries will also be major issues, such as diabetes and cardiovascular disease. But we can do much now to prevent many cancers, as in Africa up to 40% are caused by infections. We need to start now with training and research networks across Africa that will address the different needs of the regions — and we must have Africans setting the agenda, not outside agencies.

"We have not lost the battle against cancer yet – there is time to get it on government agendas although of course we still have major communicable disease problems."

The reason he stresses prevention is simple –

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there is a massive lack of resources to detect and treat cancer in Africa, as revealed in stark data from the International Agency for Research on Cancer (IARC). It has found, for example, that breast cancer survival five years after diagnosis has ranged from just 12% in the Gambia to nearly 80% in countries such as South Korea, while bowel cancer survival is even lower, at 10% in the Gambia and Uganda. The vast majority of patients present with late stage disease.

As Gueye says, the lack of infrastructure will not change dramatically without concerted action by governments. For example, a country as large as Nigeria has only 40 urologists to serve the entire population of 140 million, and many of the continent's 53 countries have no or maybe a single radiotherapy machine, while cancer drugs are simply unaffordable and not yet part of widespread international aid. The epidemic of cancer that is on its way will surely overwhelm already badly stretched healthcare systems.

"We can though prevent cervical cancer, hepatocellular cancer and HIV-related malignancies, which are all caused by infections, and we can also introduce more effective tobacco and environmental pollution control," says Gueye. "And one of our key goals at AORTIC is to urge governments to establish national cancer control programmes that will start to address resourcing issues, such as reversing the brain drain of doctors and scientists away from Africa and putting in place more training and treatment facilities."

Gueye and colleagues also aim to build on research into the characteristics of cancer among Africans, such as why prostate and breast tumours tend to be more common and aggressive among black people not just in Sub-Saharan Africa but also in the Caribbean and North America.

A particular priority, however, is filling in major knowledge gaps in the incidence of cancer in Africa – there are few registries that are gathering sufficient data. The IARC notes that there is a "dire need for population-based cancer survival information from

THE STATISTICS

- One fifth of all cancers worldwide are caused by a chronic infection, and up to one third of cancers in the developing world are curable if caught early
- 100,000 children die unnecessarily each year from cancer
- Only 5% of global resources for cancer are spent in the developing world
- African states will account for a million new cases a year out of 16 million worldwide by 2020
- Low- and middle-income countries account for only 6% of world morphine consumption
- In Ethiopia, 85% of the population have never seen a healthcare worker
- Uganda has one cancer unit for 32 million people

developing countries", and Gueye says that of all the actions in AORTIC's strategic plan for 2010–2015 (subtitled 'Working together to prevent and control cancer in Africa') improving data collection is the first and most important measure.

Gueye's own position as AORTIC president is also a sign that cancer has more chance of being a serious proposition for national governments on the continent. Until fairly recently, he says, the organisation was not an effective force, as it had been set up and run mainly by expatriate Africans in the US (it was founded as far back as 1983). Now Gueye and colleagues in Africa who have become involved recently have managed to revitalise the organisation, such that last November in Tanzania its biennial conference attracted some 700 delegates, and a call was made by Tanzanian president Jakaya Kikwete for African leaders to include cancer control in national health plans.

"What is also helping is that people are becoming better informed about cancer thanks to the Internet and programmes on the BBC and CNN, and stories in local media, while prominent people who have cancer have been speaking out, such as Desmond Tutu in South Africa," says Gueye. Events such as World Cancer Day (4 February, led by the UICC, the International Union Against Cancer) also contribute – this year the focus was on prevention, including tackling the infections that can cause cancer.

Uniting a continent as large and diverse as Africa around cancer is a daunting task, but Gueye feels that getting the messages across about what is most appropriate for African countries offers considerable hope in the years ahead. "The critical force is the African Union – the highest level meeting of nations – to which we aim to take our strategic plan. If we can engage all political leaders we can make similar progress to that in HIV/AIDS, such as opening up channels for cheap or free generic drugs."

Gueye's reason for pursuing a medical career is rooted in personal tragedy. "I lost my father when I was just 11 – he went into the medical centre in Thies and didn't come back. I don't know why he died, but it was probably related to malaria. I thought then I wanted to go into medicine to do what I could."

He was the first in his family to go to college, let alone medical school, and was attracted to urology while on rotation by one of his key mentors, Aristide Mensah, the professor of urology. He was fortunate, he adds, that Senegal has a long tradition of investing in training. "The first medical school in Francophone Africa was in Senegal and the country has had a stable democratic culture since its independence 50 years ago."

He trained as a urological surgeon and with the country's links with France did more than three years of fellowships in Bordeaux and Paris, learning the then latest techniques such as radical prostatectomy and bladder replacement surgery. He is also a master trainer in reconstructive urology, such as repairing uro-genital fistula, and continues to play an important role in healing the scars left by the widespread rape that has been a feature of many wars in the region. Today he is not only head of urology at Grand Yoff general hospital in Dakar, but also the chief medical officer at the hospital, and professor of surgery and urology at Dakar's Cheikh Anta Diop University. What's more, he is also still the president of the Pan-African Urological Surgeon's Association – but as he says, in Africa it is not unusual to find doctors performing multiple jobs.

"But we are fortunate in my hospital that we

The reason he stresses prevention is simple – there is a massive lack of resources to detect and treat cancer

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With members of his urology department, at the Grand Yoff general hospital, Dakar

have multidisciplinary teams in urology and other specialties, which is not the case of course for many African surgeons. At present I do mainly surgery and hormone therapy for prostate cancer, which is my main specialty, and I have colleagues who specialise in other operations and who administer chemotherapy. We are also able to carry out procedures such as radical prostatectomy that are not available in many places in Africa owing to a lack of trained surgeons and resources. Before we introduced the latest surgical techniques, people just came to the hospital and received palliation and died. Now we are able to track cases earlier and people are more confident about undergoing surgery and we carry out radical procedures on a daily basis."

That said, Senegal has just one radiotherapy machine for the whole country – it is based in another hospital in Dakar – and it is only recently that planning for cancer has become more organised. "It was when we held the AORTIC conference in Dakar in 2005 that our minister of health and prevention made cancer a focal point for the first time, and we now have a national cancer plan that includes activities such as outreach and education work, early detection for cervical cancer and mammography in some places, and it is now much easier for people to see doctors about cancer."

The country is one of the few in Sub-Saharan Africa with a cancer plan, he adds – others that do, at least in draft form, are Ghana, Nigeria and Tanzania; the Nigerian plan was launched this year to coincide with World Cancer Day.

But Senegal, he adds, does not yet have a population cancer registry, and with most data about cancer in Africa coming only from hospitals, there is gross underreporting of cancer incidence and countries tend to focus on what doctors see in practice, and the true scale of the problem is hidden.

"That is why I see developing population-based cancer registries as so important, and I think the best route to achieve this more consistently is through the World Health Organization, as it has an office in each country and already collects data on malaria and TB and other diseases from health ministries, and has influence

with governments. In fact the WHO regional office for Sub-Saharan Africa in Brazzaville, Republic of the Congo, has started to train people in cancer registration, but rolling this out will take five years or more."

There are differences in the types of cancer most common in different parts of Africa, adds Gueye. North Africa has obvious differences with Sub-Saharan Africa, as the people in the north are mainly from Arabic inheritance. A striking difference is, for example, the high incidence of bladder cancer in Egypt, which is linked to schistosomiasis, a parasitic disease, although Gueye notes that there is now a shift to tobacco-related bladder tumours in the country (and inevitably, smoking is becoming an increasing problem throughout Africa).

Regions in Sub-Saharan Africa show some patterns, such as prostate cancer being more common in West Africa, and Kaposi's sarcoma, the cancer related to HIV infection, reported more in Central and East Africa. "Breast and cervical cancers are common everywhere, with cervical being the most common female cancer, while hepatocellular cancer is the most commonly diagnosed cancer overall, when you combine data from both men and women, and it is the most common cancer in men and by far the major male cancer killer."

Hepatocellular carcinoma – liver cancer – is a deadly disease that can be caused by chronic infections with hepatitis B and C viruses (especially B), and also by concurrent exposure to alfatoxins, produced by funguses that infect crops and which are extremely carcinogenic. Clearly, halting transmission of hepatitis B can greatly help cut the incidence of the disease, and a vaccine for the virus has been available for 20 years. But Gueye says that, given the high prevalence of infection, especially in East and West Africa, much research remains to be done on how the disease develops and on appropriate antiviral treatments for carriers, in a similar way to the development of HIV drug treatments.

While liver cancer is very much a disease of the developing world, so too are HIV/AIDS-related malignancies, which include not only Kaposi's sarcoma, but also increased susceptibility to cervical cancer and non-Hodgkin's lymphoma. "Kaposi's sarcoma is a particular problem in Central and East Africa where the HIV infection rate is high and people do not get early anti-retroviral treatment, which increases the prevalence of Kaposi's, although we do not know the full natural history of this disease. Some countries are reporting that 25% of new cancer cases are HIV/AIDS-related so we urgently need to develop better treatment programmes for these patients," says Gueye.

Senegal, he adds, has a relatively low HIV incidence – about 1% of the population – and has taken a hard line with HIV carriers, passing a law that allows doctors to inform patients' partners of their infection status. "I did a study with a colleague where we found that 25% of men didn't change their behaviour when they knew they were HIV positive – they didn't tell their wife and didn't use a condom," says Gueye.

While Senegal does not see much HIV/AIDS-related cancer, Gueye says he saw many Kaposi's sarcomas when he worked as a United Nations surgeon in Rwanda towards the end of the genocidal conflict there. His humanitarian work there won him several honours, including a UN Peace Medal.

At least generic drugs for the major communicable diseases such as HIV/AIDS are now available to many Africans free of charge, he notes, although not without a considerable struggle with patent holders. But that is not the case for most cancer drugs. With increasing numbers of standard chemotherapy drugs coming out of patent, more low-cost anti-cancer agents could be available, but the latest targeted therapies will be way out of reach for most – not to mention the lack of medical oncologists, who are much rarer than surgeons.

Vaccines are another class of drug where price is an issue, he adds, with vaccines against human papillomavirus (HPV – the cause of cervical cancer) currently unaffordable for most countries. Attempts to introduce HPV vaccines are now being made by organisations such as the GAVI Alliance – it aims to bring the costs down greatly with its large purchasing power. The vaccines do not, however, protect against

"We now have a cancer plan that includes education, early detection for cervical cancer and mammography"

all strains of HPV, and are not a substitute for screening (see also cover story on Vesna Kesic, *Cancer World* Nov–Dec 2009) and Gueye adds that some Africans can reject vaccines, fearing that HPV shots, for example, could render girls infertile.

In turn, screening has major drawbacks in Africa, says Gueye, apart from the huge logistical issues that entails. "It is simply that it is unethical to screen everyone and then not be able to offer treatment to all for diseases we detect," he says. "The day we have mass treatment for everyone is the day we start talking about mass screening." Instead, as in Senegal presently, the approach should be one of raising awareness and carrying out examinations when, for example, women attend a family planning clinic. "We need to target certain groups instead," he says, adding that it is especially important to head off the growth of controversial screening tests such as PSA for prostate cancer.

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Best practice. With its multidisciplinary approach to treatment and emphasis on in-country training and research, Dakar's Grand Yoff general hospital offers an example of the sort of sustainable cancer service that can be achieved in all but the poorest countries, if only the political backing is there

Gueye became involved in international prostate cancer research in the late 1990s, notably on a programme that is looking at the reasons why black people, particularly of West African origin, have the world's highest incidence and mortality from the disease. He has been working with colleagues at the University of Pennsylvania on some of the first studies to examine the risk factors for prostate cancer outcomes for African-American and West African men, and also European Americans, who have lower incidence. Now under the umbrella programme title of MADCaP (Men of African Descent and Carcinoma of the Prostate), there were initial parallel studies in Dakar and Philadelphia that have gathered data on incidence, genetic differences (and possible candidate genes) and environmental factors such as diet, revealing, says Gueye, that African men seem to be at higher risk than their African-American counterparts, which may be partly explained by Caucasian genes mixed in as the diaspora expanded to North America.

What especially interests Gueye as a clinician is that this research could lead to better targeting of men most at risk, and also the opportunities it is bringing for capacity building for researchers and infrastructure for carrying out such studies, not only in Dakar but in the other African sites that are interested in participating alongside a growing number of American centres in MADCaP, such as in Nigeria, Ghana, Zambia and Uganda.

However, this type of research – which is also being conducted with women to find out why African American women are more likely to suffer from aggressive 'triple negative' breast cancer – is not without possible controversy. Gueye says there is a danger of black Africans being used as guinea pigs for trials, with rich countries leaving research sites behind with little support once trials are complete (and he goes as far as mentioning the infamous Tuskegee syphilis experiment in the US, where poor African-Americans were left untreated after the discovery of penicillin). "We have to be very careful about collaboration – it must be an equal partnership," he says.

For his own part, Gueye has organised several successful collaborations, not just in research but also in training, which he sees as particularly vital to building capacity and keeping young African doctors in their countries. "For example we have had paediatric urologists from Pittsburgh, Pennsylvania, here in Dakar at a workshop on paediatric urology, attended by more than 50 people. And every year, for more than five years, residents and staff from surrounding countries have received training in radical prostatectomy with the help of Albert Ruenes, a urologist from Doylestown,

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Pennsylvania. I see onsite training as the key – we can't go on sending doctors to train abroad, otherwise we will continue to lose some. Also, if you send someone away for training there is no guarantee they will teach others when they return.

"I could easily have stayed in France – indeed, I was advised to – and I chose to come back. But we must also put in infrastructure for people to work and train with." As he says, it is pointless sending a state of the art scanner to a site where it will fall into disuse if no one can use and maintain it, while a surgeon will not be able to work on prostate cancer if they can't request scan to determine if a tumour is localised or not.

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"And maintaining skills is vital to carrying out radical procedures such as prostatectomy and nephrectomy, otherwise urologists and other surgeons will fall back to late management of cases and palliation only. Then when a patient comes in presenting early they can't provide a service."

Other important topics in the AORTIC strategic plan, says Gueye, include paediatric cancers such as Wilm's tumour and Burkitt's lymphoma. While relatively rare, although undoubtedly under-reported in Africa, the cure rates for African children are shockingly low – about 5% compared with some 80% in the developed world. The UICC with pharmaceutical company Sanofi-Aventis, is having some success with raising the profile of childhood cancers in poor countries with the My Child Matters programme, notes Gueye, and it is now running in 26 countries including several in Africa.

Given the late presentation of far too many cancer patients, pain and palliative care are other big issues, not least for children, says Gueye. Morphine availability and use is particularly poor in Francophone countries, he says, and he would like to see more local facilities to manufacture drugs. "And palliative care must be a priority in any national cancer plan."

There is, he adds, the African Palliative Care Association, and other bodies on the continent working in various aspects of cancer control, so it is not the case that there is little support for AORTIC's agenda (there is also a pan-African radiotherapy group – even though the vast majority of machines are in South Africa and the North African countries).

"One of AORTIC's tasks at present is building a database of organisations in Africa – that's almost done now," says Gueye. "And of course we also need international collaboration with agencies such as the International Cancer Registry Association and IARC, US bodies like ASCO, AACR, NCI/NIH, ACS and so on, and also the UN agencies."

There are certainly many organisations outside Africa with interests in supporting cancer work on the

continent, and no shortage of declarations of intent, such as the London Declaration on Cancer Control in Africa, adopted at a conference in London in 2007 and put forward by AfrOx (Africa Oxford Cancer Foundation – now working in Ghana, and established by David Kerr, who has helped with cancer plans for Ghana and other African countries). This built on a flurry of developing world conferences and declarations, including the Cape Town Declaration on Cancer Control in Africa.

For Gueye, the test is whether such initiatives are progressing beyond talk to action, and action determined by Africans, and not by agendas set from afar. "We call it NATO – no action, talk only – but as we refine the AORTIC strategic plan to make it more practical we hope organisations will be able to integrate more with what Africa needs."

Of all the many programmes that are making some headway on the ground, he picks out the IAEA (International Atomic Energy Agency) Programme of Action for Cancer Therapy (PACT), which was set up in 2004 and which partners with the WHO and a range of other organisations to build public–private partnerships and mobilise resources for cancer control in the developing world. One of its six demonstration pilot projects is in Tanzania, and the IAEA is challenging companies to produce equipment suitable for use in poorer countries.

Certainly, Gueye has extensive contacts with many organisations now, which he can bring to bear to further AORTIC's mission, though moving the organisation forward has required overcoming opposition from long-standing interests, he says, while bridging the language barrier that divides French-speaking from English-speaking countries is always a challenge.

Gueye certainly seems to have what it takes to meet the challenge. Tim Rebbeck, professor of epidemiology at the University of Pennsylvania's School of Medicine, who co-leads the US/Africa prostate risk factors study with Gueye and others, comments particularly on his leadership skills, and the great respect he commands among those he works with. "He has an exceptional way of dealing with people. He seems to have no ego to get in the way of his work, but nurtures and motivates those around him to get things done."

Gueye is a family man – his wife Ramatulaye is a language specialist and teacher, and he has three children, two now grown up, so the extensive travel he undertakes now may not be so disruptive.

"My aim now, along with the AORTIC executive council, is to finish the strategic planning for AORTIC and then build capacity for research and training by establishing regional centres of excellence that will cover all aspects of the cancers we see in Africa, and we have plans for this. We must have research infrastructure that promotes capacity building, such as helping young researchers to apply for grants and write protocols.

"We can't tell countries what to do – just help shape policies at national and pan-African level. But if we don't lobby for our strategic plan we will deserve to disappear as an agent of change."

Gueye himself seems determined to continue as an agent for change at this critical period, helping Africa meet the challenge of its rising tide of cancer.

GLOBAL AND AFRICAN EFFORTS

The World Cancer Congress – held every two years – will be highlighting system changes at the 2010 event in Shenzhen, China, in August. Topics such as cancer registries as a basis for cancer prevention and control, the untapped potential of public health law and policy in cancer control, and 'ending the pain' – what has to be done for 5 million sufferers – are central to the World Cancer Declaration road map and of crucial importance to AORTIC's agenda in Africa.

The UN General Assembly recently adopted a resolution calling for the curbing of premature deaths from non-communicable diseases, and for a high-level meeting on the issue, with the participation of heads of state, to take place in New York in September 2011.

Apart from AORTIC, and major organisations such as the WHO and the IAEA (International Atomic Energy Agency), agencies and projects seeking to improve cancer control within Africa include the Pan-African Clinical Trials Registry (www.pactr.org), the African Radiation Oncology Group, the African Tobacco Control Alliance, the African Palliative Care Association, the African Cancer Network, Cancer-Africa, AfrOx and EDUCARE (EDUcation for Cancer in African Regions).

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