

Making a difference

Stories from the field:

how access to scientific literature
is improving the livelihoods of
communities around the world



About Research4Life

Research4Life is a public–private partnership between the World Health Organization (WHO), the Food and Agriculture Organization (FAO), the United Nations Environment Programme (UNEP), the World Intellectual Property Organization (WIPO), the International Association of Scientific, Technical and Medical Publishers (STM), Cornell University, Yale University, and several technical partners including Microsoft. The partnership's goal is to contribute to the attainment of the UN's Millennium Development Goals, reducing the knowledge gap between industrialized countries and developing countries by providing affordable access to critical scientific research. Since 2002, the four programmes – Research in Health (HINARI), Research in Agriculture (AGORA), Research in the Environment (OARE), and Research for Development and Innovation (ARDI) – have provided researchers at more than 6000 institutions in more than 100 developing countries and territories with free or low-cost access to more than 9000 leading journals in the fields of health, agriculture, environment and technology. For more information visit www.research4life.org.

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Foreword

By 2000, it was becoming increasingly clear to senior managers at the World Health Organization (WHO) that doctors, academics and students in most of the world's poorest countries were suffering from lack of access to up-to-date information in biomedicine, hampering both the delivery of health care and essential research into medicine and disease. Most university libraries and research organizations in low-income countries did not have the budgets to pay for important peer-reviewed journals, which are fundamental to the work undertaken in these very institutions.

In March 2001, representatives from WHO met with senior staff from six of the largest international scientific publishers to explore ways of closing this critical information gap. That meeting would see the birth of a public-private partnership designed to provide those working in institutions in the world's poorest countries with this essential access. The outline of what would become HINARI was quickly established and, by the end of 2002, 410 institutions in 55 (of 69 eligible) countries had registered for access to around 2000 journals.

Few of us who were lucky enough to share in the early development of HINARI could have foreseen its growth. In 2003, AGORA, sponsored by the Food and Agriculture Organization (FAO), joined the partnership, providing access to journals in the field of agriculture. In 2006, the United Nations Environment Programme joined with the OARE programme in the field of environmental science. In July 2011, ARDI, focusing on access to research for development and innovation, and sponsored by the World Intellectual Property Organization (WIPO), became the fourth programme in the partnership, which by now

had been given the collective title of Research4Life. Currently, over 6000 institutions are registered in more than 100 countries and territories to access more than 9000 journals, books, databases and other publications from more than 150 publishers, and the partners are already planning for the future of Research4Life beyond 2015.

The growth of Research4Life could not have happened without the commitment and determination of scientific publishers from around the world, dedicated technology partners such as Microsoft, academic institutions including Cornell and Yale Universities, and others who are truly making a difference by providing access to vital information to those who need it.

But success is not measured by how big Research4Life has become, nor by how the programmes reflect on the contributing partners. The only worthwhile measures of success are improvements in health, agriculture, environment and innovation in Research4Life countries and territories, and in the local and international publication of valuable research performed there. The wonderful and moving stories contained in this booklet demonstrate that the Research4Life programmes are working.

*Barbara Aronson
Maurice Long*

Barbara Aronson, through WHO, and Maurice Long, through STM, were key players in the formation and development of Research4Life and its programmes.

HINARI
Research in Health

 **AGORA**
Research in Agriculture

OARE
Research in the Environment

ARDI
Research for Innovation

Celebrating 10 years of Research4Life

To celebrate Research4Life's 10th anniversary in 2011, we launched a user experience competition. We asked users to share with us how HINARI, AGORA or OARE has improved their work, life and community. In total we received some 60 entries from countries in all five continents. This impressive array of inspiring testimonies revealed a wealth of positive impacts brought about by Research4Life. This book celebrates the stories behind some of these competition entries. This illuminating series of case studies provides insights into how access to the results of peer-reviewed research from Research4Life publisher partners is benefiting the health, well-being, and economic and social development of communities in the developing world, as well as contributing to greater environmental health and awareness.

As you read through the following pages, you will discover how access to HINARI, AGORA and OARE has:

- allowed a doctor in Ethiopia to successfully treat a patient with a rare and serious condition, and helped his hospital to deliver more effective training to orthopaedic physicians;
- enabled local researchers, scholars and scientists at a Malawi agricultural college to produce quality and well-researched project reports, scientific papers, theses and dissertations;
- enabled a Nepalese paediatrician to save children's lives through better treatment of diarrhoeal diseases, at the same time as developing his hospital's journal into a scientifically rigorous publication;
- helped a physician to improve the lives of HIV-infected children in Zambia;

- allowed a Nigerian researcher to complete his PhD and other research on organic agriculture, biopesticides and biofertilizers, while facilitating his acceptance into the global research community in his discipline;
- helped a researcher from Burkina Faso to develop better and more informed scientific writing skills, produce focused research that he can discuss with top researchers worldwide, compete more effectively for research funding, and deliver better teaching programmes;
- allowed a Sudanese policy-maker to introduce evidence-based policy development designed to improve the Sudanese people's health in the long term;
- enabled a midwife to improve maternity care in Zimbabwe and reduce maternal and neonatal mortality rates.

If reading this book encourages you to become further involved in our programmes, either as a contributing publisher, beneficiary developing-world institution, or as a donor, please contact us at info@research4life.org.

Richard Gedy
Director of Publishing Outreach Programmes
International Association of Scientific,
Technical & Medical Publishers (STM)

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In a survey conducted by WHO in 2000, researchers and academics in developing countries ranked access to subscription-based journals as one of their most pressing problems. In countries with annual incomes of US\$1000 and less per person, 56% of institutions surveyed had no current subscriptions to international journals.

Aronson B. Improving online access to medical information for low-income countries.
New England Journal of Medicine, 2004; 350:966–968.



Photos courtesy of Mulugeta Bayisa

Ethiopia

Mulugeta Bayisa*

Physiotherapist Mulugeta Bayisa's experience with Research4Life's HINARI programme has helped him find better ways to treat his patients and teach his students. More than that, though, it has changed the way he thinks.

Mulugeta Bayisa is a practising physiotherapist who teaches undergraduate physiotherapy students at the University of Gondar in Ethiopia. He is also studying postgraduate clinical physiotherapy. When he first came to the university as an undergraduate student in 2005, there were few physiotherapy books in the library, and those that were available were over a decade old. Publications describing new research in this fast-changing and rapidly growing field were virtually non-existent. This became an even greater problem in 2008, when Mr Bayisa started teaching. With limited internet access and the scarcity of current print journals, the college lacked a culture of evidence-based practice. In such an environment, it was very difficult to answer the sort of questions – the why, what, who and how of clinical practice – that good teaching demands.

And not only did Mr Bayisa and the other physiotherapy staff rely on old publications, but they also took an outdated approach to patient care.

"We decided for the patients; we didn't include them in the decision-making process," he says. "It was very difficult for our institution to narrow the gap between what is practised now internationally and what we used to practise, which was often unable to solve our patients' problems."

A turning point

All this would change, however, in September 2010. That month, three information experts visited to talk to postgraduate students about evidence-based practice and accessing health information through the Leicester–Gondar Medical and University Link, which supports

undergraduate and postgraduate teaching programs. Crucially, they introduced Mr Bayisa to HINARI.

This, he says, marked a great turning point in his life. Using HINARI, Mr Bayisa was able to access original research articles, information on clinical trials, and reviews. Before HINARI, Google was his main source of medical information. But, without access to full journal papers, the information was often vague or incomplete, if it was available at all.

“Just as I can’t stop eating breakfast before going to work, I will not stop looking for clinical evidence on HINARI”

As Mr Bayisa used HINARI to explore current, world-leading research, his way of thinking shifted. He describes his intellectual transformation from somebody with a passive mind who accepted what was written in books or stated by superiors, to an active thinker who questioned conventional wisdom and sought evidence for or against what he was told.

“My clinical judgment was not patient-centred or wise,” he admits. “But now, thanks to HINARI, I am making difference by saying, ‘Aha! This is the right clinical practice.’”

Seeing results

Using HINARI, Mr Bayisa worked with volunteer Joanna Griffin to develop a therapeutic exercise programme for adults living with HIV and AIDS, which is now helping such people improve their quality of life. He also used HINARI to compile evidence on the use of spinal manipulative therapy for acute lower back pain, and physiotherapy management guidelines for children with paralysed arms as a result of birth injury. He is currently developing guidelines for stroke patients.

The university’s physiotherapy department is now building a research and teaching culture that is founded on rigorous appraisal of up-to-date research. Mr Bayisa and his colleagues are developing treatment protocols and guidelines that are making a real difference to their



Treating a patient with a spinal cord injury. Research4Life’s HINARI programme has led to better results for patients and students, as well as Mr Bayisa himself.

patients’ quality of life. They are now able to find answers to their – and their students’ – questions. He says that equipping students with the department’s new concept of patient care will improve the quality of physiotherapy nationwide as new graduates leave the university and begin jobs at hospitals across Ethiopia.

When he sees patients these days, those “what and who” questions that previously evaded Mr Bayisa now come to mind as a matter of routine. Who are my patients? What type of treatment am I considering for them? What are the effects of my intervention, compared with those of another? Where can I find articles that will either agree or disagree with my hypothesis of patient assessment and treatment? What are the goals of my therapy? How can I prove my intervention has improved life for my patient? What evidence is available on HINARI?

Mr Basiya sees HINARI continuing to play a central role in his work as a professional lifeline and a gateway to the best, most current research and clinical practice. Research4Life has also allowed him to set the baseline for his future research, which will investigate the culture of evidence-based practice among health professionals in Ethiopia. As he and researchers like him advance their careers with the help of HINARI and the other Research4Life programmes, the gap in patient care between the developed and developing countries will continue to narrow. ■

** Physiotherapist at the University of Gondar, College of Medicine and Health Sciences (Department of Physiotherapy), Gondar, Ethiopia*

Mulugeta Bayisa and his team at the University of Gondar, College of Medicine and Health Sciences, Gondar, Ethiopia.





Burkina Faso

Dr Sami Hyacinthe Kambire*

Research4Life's AGORA programme showed agronomist Sami Hyacinthe Kambire that his research was not as original as he had thought – but this realization was exactly what he needed to lift his work to international standards.

Until September 2008, Sami Hyacinthe Kambire, an agronomist in Burkina Faso's Institute for Environment and Agricultural Research (INERA by its French acronym), was a frustrated researcher. Although part of the Ministry of Scientific Research and Innovation, INERA, like most research organizations in the country, could little afford subscriptions to up-to-date international journals.

"This situation was untenable," laments Dr Kambire. "Without access to scientific information, it is impossible to formulate relevant research topics, and write and publish quality scientific articles. It is impossible to work effectively as a researcher."

Research revolution

Then, in 2008, he attended a training session run by the Information Training and Outreach Centre for Africa

(ITOCA), an organization that improves information and communications technology skills for researchers in sub-Saharan Africa. Dr Kambire describes the moment that ITOCA introduced him to AGORA as "a real revolution in my life as a researcher", which boosted immeasurably his confidence in his own work.

Working in INERA's Department of Natural Resources Management and Production Systems, Dr Kambire is a specialist in soil fertility management, soil and water conservation, and environmental assessment. He also teaches agronomy students from the Université Polytechnique de Bobo Dioulasso and the Centre Agricole Polyvalent de Matourkou. Gaining exposure to the world-leading research available via AGORA has had a profound effect on his work. Given his newfound access to relevant literature, Dr Kambire can perform research much faster and his scientific writing ability has

improved substantially, for both research papers and funding proposals.

This increase in efficiency has boosted his research output. Before AGORA, Dr Kambire found that he often devoted large amounts of time to research that had already been performed elsewhere. But without access to journals, he had no way of knowing if he was doing work that had been done before. He cites as an example his 2002 research on the effect of organic fertilizers on tomato wilt caused by the fungus *Ralstonia solanacearum*. The disease, which attacks the leaves of the tomato plant, makes it impossible to grow tomatoes in the dry season in several regions of Burkina Faso.

Dr Kambire was anxious about his research from the start, given that his most recent reference was a disconcerting 13 years old. Nevertheless, refusing to let his work sit in a drawer and gather dust, he wrote up the paper and submitted it for publication. Several months later, he received the rejection that he had almost anticipated. Sure enough, one of the reasons for the rebuff was that he had cited out-of-date references. Unable to access more recent literature, he reluctantly filed the paper away, unseen by agronomists elsewhere.

“ **AGORA is a powerhouse of scientific research for those interested in real science**

Unwelcome discovery

Several years later, when Dr Kambire experienced his career-changing moment, the first thing he did was to use AGORA to search for research on tomato wilt. He was shocked to discover a large number of papers on the topic, from several countries. It was a defining moment: for years he had assumed he was one of few researchers working on this problem; all of a sudden he was faced with the reality that his work was not as original as he had thought. Encouragingly, however, results from other researchers confirmed his own.

In 2011, Dr Kambire plans to complete and submit at least four research papers, something that he could not have contemplated before AGORA. He has already submitted two papers, on determining the critical level of soil organic matter in Burkina Faso's smallholder farming systems, and on predicting maize yield using rainfall data during the rainy season planting period.

With his improved understanding of developments in his field, he knows that his work is relevant and he is confident discussing research issues with leading scientists worldwide. This broader knowledge has also boosted his ability to win international funding for his



Thanks to Research4Life's AGORA programme, Dr Sami Hyacinthe Kambire can be confident that his research is truly relevant.

work, including a current project on strengthening capacity for the diagnosis and integrated management of pest problems in Burkina Faso. Armed with the latest information, his teaching quality has improved as well.

AGORA has opened Dr Kambire's eyes to the importance of information management. In this light, he has become a strong advocate of researchers working more closely with librarians. He feels that this relationship is not strong, with African researchers unaware of how librarians can help them, and librarians under the impression that researchers undervalue their efforts.

"Researchers should thank the librarians, who help find their bibliographies," he says. "The work they perform is science without acknowledgement." ■

**Research agronomist at the Institute for Environment and Agricultural Research (Kamboinsé Research Station), Ouagadougou*

Zambia

Dr Tim Meade*

Research4Life's HINARI programme is helping a small but effective charity improve the lives of HIV-infected orphans in Zambia.

In 2003, a woman with AIDS, seven months pregnant and living in a bus terminal in the Zambian capital of Lusaka, was found by nuns and brought to a shelter. After delivering the baby, physician Tim Meade and a team of volunteers looked after the child. Unable to care for her newborn son, the mother turned to "Dr Tim". As a sign of gratitude, she named the boy Tim. Thus was germinated the idea for Tiny Tim & Friends (TT&F), an organization that specializes in paediatric HIV/AIDS clinical care.

HIV/AIDS takes an enormous toll on Zambia. In Lusaka, around one quarter of the adult population are infected and there are tens of thousands of AIDS-related deaths each year. Mother-to-child transmission is a major route of infection, with more than 14 000 children infected nationally in 2010, out of 80 000 newborns exposed. Tragically, the country is also home to a million AIDS orphans.

TT&F screens orphans for HIV in vulnerable communities surrounding Lusaka and provides anti-retroviral drugs, which suppress the HIV virus and stop the progression of AIDS. The charity currently serves almost 500 children and their caregivers through its medical and psycho-social care programme.

Even a single article can change best medical practice on the ground in resource-poor settings

On his first visit to a Tiny Tim & Friends clinic, 11-year-old Crispin was dangerously underweight. Three months later, he is a picture of health.



Dr Tim Meade treats Zambian children at a Tiny Tim & Friends clinic in Lechwe Village, about two hours outside the Zambian capital of Lusaka.

Photos courtesy of Tiny Tim & Friends

Research4Life plays a major role in TT&F's work, allowing research that informs the development of policies and medical procedures that provide the best possible treatment. Access to HINARI has also allowed the charity to obtain essential information about groups performing related research in similar settings. According to Dr Meade, this makes a big difference in resource-poor areas where published data are often unavailable. "Every issue of just three of the journals accessed through HINARI – *AIDS*, *Journal of Infectious Diseases* and *Journal of Acquired Immunodeficiency* – contain papers relevant to resource-limited settings and TT&F's work," he says.

One of the key policies developed by Dr Meade and his team through their HINARI-assisted research is that mothers with HIV should continue to breastfeed their babies until two years of age, if stable on anti-retroviral medications. This allows children to thrive with minimal risk of the infection. Another is that social workers and their training are crucial to the success of TT&F – training and empowering them leads to the best outcomes for the mothers and children.

By providing high-quality medical care and personalized intensive adherence plans, TT&F allows patients to access the medical and social assistance they need, thus prolonging their lives and reducing the transmission of HIV in Zambia. ■

* Country Director, Tiny Tim & Friends Zambia
(www.tinytimandfriendszambia.org)

Nigeria

Edward Oyekanmi*

The first thing agricultural researcher Edward Oyekanmi did when he began his job at a new university was to ensure that the staff and students had access to Research4Life's AGORA programme.

As a PhD student at the University of Ibadan, Edward Oyekanmi was lucky enough to have access to AGORA. Acutely aware of how important this was to him as a student, it is no surprise that one of the first things he did after starting his job at Wesley University of Science and Technology in 2009 – less than a year after the university opened – was to convince management that AGORA was a necessity.

Thanks to Mr Oyekanmi's encouragement, the university invited the West African representative of the Information Training and Outreach Centre for Africa (ITOCA) to present a seminar on Research4Life. Prior to this, Wesley had little awareness of these programmes. Management quickly comprehended their immense benefits and the university successfully applied for access.

Mr Oyekanmi has almost completed his PhD research on the management of plant parasitic nematodes in maize, thanks in no small part to AGORA, which greatly boosted his access to up-to-date literature from around the world. AGORA has also allowed him make rapid progress on his other research, which includes work on organic agriculture, biopesticides and biofertilizers.

"As a young scholar, in my six years of access to this Research4Life electronic library," he says, "I already have 10 publications to my credit in reputable international and national journals."

“AGORA, HINARI and OARE are the tripod on which our scientific community stands

Furthermore, he is drumming into his Wesley students the importance of comprehensive literature searches, insisting that AGORA must be consulted when writing up their assignments and scientific reports. Mr Oyekanmi firmly believes that with continuing support for Research4Life from publishers and funding agencies, Wesley can achieve its goal of becoming a world leader in scientific research. "The high impact of Research4Life activities is felt mostly in the developing nations, where poverty is pandemic and health challenges are on the increase," he says. "Access to scientific information is expensive, and many researchers in developing nations cannot afford it."



Edward Oyekanmi observes his plants' responses to inoculation with nematodes.

Photo courtesy of Edward Oyekanmi

Mr Oyekanmi suggests that tools such as AGORA will be instrumental in Africa's scientific development. "I do hope," he says, "that Research4Life will continue to reach out to the unreached in the developing nations so that access to scientific information will be affordable." ■

*Lecturer, Wesley University of Science and Technology, Ondo; and PhD student, University of Ibadan



Photos courtesy of Gudrun Witt

Zimbabwe

Gudrun Witt*

A realization that childbirth in Zimbabwe needed to become far safer inspired Gudrun Witt to start an organization that is working towards exactly that – and Research4Life’s HINARI programme is playing a key role.

When Gudrun Witt returned to Zimbabwe in 2007 after several years working abroad as a midwife, she was dismayed by the midwifery care available to women in her home country. In particular, she was shocked by “horrendous” maternal mortality rates that, she says, “are quite unacceptable in modern society given the body of knowledge that is available – many women are dying simply because of archaic practices and thinking which have absolutely no evidence to support their continued use.”

Childbirth in Zimbabwe suffers from a dearth of evidence-based practice. Traditionally, it involves a great deal of intervention and very little individual choice for the woman. According to Ms Witt, there was little or no evidence that many interventions actually worked, despite some research that actually advised *against* several common practices.

It was in this environment – with life in Zimbabwe becoming increasingly hard and inflation spiralling out of all control – that Ms Witt founded New Beginnings. By making available relevant literature, the organization educates not only healthcare practitioners but also women and their partners, with the aim of better and safer maternity care, and, ultimately, a reduction in Zimbabwe’s maternal mortality rates.

Changing fortunes

Before beginning the organization, Ms Witt enrolled in further study in midwifery through the London South Bank University. Based at the University of Zimbabwe’s Medical Library, she became increasingly exasperated by the outdated volumes of medical literature. Worse still, when a relevant journal was available, it was not uncommon to find pages missing from the article that had taken so long to find. Her fortunes changed,

however, when the library staff brought HINARI to her attention. With relevant, up-to-date literature at her fingertips, she completed her B.Sc. (Hons) in Midwifery (Post Registration). Subsequently, one of Ms Witt's first acts as managing director of New Beginnings was to register the organization with HINARI.

"Given the grave economic situation in Zimbabwe at the time, I had an interest in researching the safety of home as opposed to hospital," she recalls. "Many women could not afford to pay hospital or clinic fees and I felt that planned home confinements would be far preferable to the unattended births at home that were occurring because of financial hardship."

However, she also realized that there would be intense opposition to the notion of home birth among some obstetricians, many of whom traditionally have a low opinion of midwives and their opinions. With HINARI, though, she was able to arm herself with the research-based literature she needed.

“ To have free access to such an abundance of information was remarkable and a great blessing

Building an evidence base

Although the primary goal of New Beginnings is developing a community-based midwifery service with the option of home birth, the organization is working in a number of other areas. Ms Witt is

negotiating a service to teach and share current research in existing maternity clinics and hospitals. The organization also has plans to introduce yearly updates and training in obstetric emergencies and neonatal resuscitation, which will be mandatory for practitioners to maintain their registration. Similarly, New Beginnings is negotiating to conduct study days, which will incorporate current research on different aspects of maternity care provision. The intention is that practitioners will be required to attend a minimum number of these before their annual registration can be renewed.

The ability to access evidence through HINARI has allowed the sharing of knowledge that is changing the way crucial activities – such as resuscitation of the newborn – are carried out. New Beginnings has already heightened awareness of the need for evidence-based practice. Recently in Harare, a growing number of midwives have been meeting with each other, as well as obstetricians, to see how a more woman-centred approach to maternity care can be achieved, and to address the problem of women's lack of choice and involvement in making decisions on their own childbirth experience. According to Ms Witt, "There is no way this could be done without having the benefit and privilege of accessing the most up-to-date research so readily and easily facilitated by Research4Life." ■

**Nurse, Midwife and Managing Director, New Beginnings, Harare*

Gudrun Witt meets new mothers in Rushinga.





Nepal

Dr Arun Neopane*

In gaining access to Research4Life programmes, Kathmandu's Shree Birendra Hospital has not only lifted the standard of medical research in Nepal, but has also improved – and even saved – the lives of many of its patients.

In his role as a paediatrician at Kathmandu's Shree Birendra Hospital, Arun Neopane is a voracious consumer of journal papers. This passion led to his appointment in 2003 as the hospital's Officer in Charge and editor of the *Journal of Shree Birendra Hospital* (JSBH). Over the next few years, Dr Neopane led the conversion of JSBH from an annual publication with news, views and hospital updates to a biannual peer-reviewed scientific journal – with original papers, review articles and case reports – and made it available electronically through Nepal Journals OnLine (NepJOL).

Research out of reach

Despite having subscriptions to a small number of international journals, the hospital was desperately short of the up-to-date medical literature that doctors need to maintain and upgrade their skills and knowledge. As is the case in other low-income countries, university

libraries and research organizations in Nepal do not have the budgets to pay for important peer-reviewed journals.

Critically, Dr Neopane and his team convinced the hospital administration in 2007 to invest in an internet connection. This unblocked the window to the wider world of medical research, but, without access to journals, that window remained locked. The hospital staff could now read abstracts via the PubMed database, but the complete papers – crucial for the understanding required to incorporate research results into practice – remained out of reach.

Nevertheless, it was also the new internet connection that led Dr Neopane to Research4Life's HINARI Programme. The institution was granted access to HINARI in February 2008 and it hasn't looked back since. The Shree Birendra staff gradually gained access to a vast

repository of medical literature that was previously unaffordable and inaccessible.

"I can remember those days," says Dr Neopane, "when we had to go to the library and sit in the archives section turning page after page, reading all the abstracts and getting them Xeroxed, and finally coming back to square one, frustrated by the literature search and finally not finding what one needed. Gone are those days for doctors now, and all because of free access to medical literature through HINARI."

Better clinical treatment

The most concrete result of the hospital's access to HINARI is better clinical treatment that has directly improved patient health. For example, research published in *Pediatrics* (the journal of the American Academy of Pediatrics) showed that zinc is essential in treating diarrhoeal diseases in children, mitigating illness and even saving lives. Ironically, although some of this work had been performed in Nepal, Nepalese institutions could not afford the subscriptions to the journal and the country's doctors did not have access to the results. Using HINARI, Nepalese paediatricians discovered the information and changed their treatment of diarrhoea, saving many lives and improving the quality of life of many sick children.

More sophisticated medical research will only be possible in Nepal with access to the literature that HINARI provides

Beyond better clinical practice based on others' research, HINARI has transformed the way that medical research is performed, not only at Shree Birendra Hospital but also for the Nepalese medical community as a whole. And it was because of HINARI that Dr Neopane was able to advance his own research. In March 2007 he was appointed editor-in-chief of the *Journal of Nepal Paediatric Society* (JNPS), the oldest specialty journal in the country. Launched in 1981 and published annually, JNPS had struggled as a credible scientific publication.

Waiting for treatment: Research4Life's HINARI programme is helping to improve the standard of medical research and practice for Nepalese people.



WHO/Tom Pietrasik



A Nepalese child is treated for influenza.

WHO/Tom Pietrasik

With a small editorial team, Dr Neopane has transformed it into a thrice-yearly, internationally recognized, peer-reviewed journal with its own website (www.nepjol.info/index.php/JNPS). HINARI made all this possible by allowing Dr Neopane and his colleagues to learn from leading journals.

Dr Neopane's achievements were further recognized with his appointment as general secretary of the recently established Nepal Association of Medical Editors. He describes Nepal's medical research as still in its infancy, but he is confident that it will progress from the current work, which mostly comprises clinical features and epidemiology, to more complex work based on molecular biology and genetics.

HINARI has fundamentally changed the research landscape in Nepal, with five national journals now indexed in PubMed and many more aspiring to this (including JNPS, which will be considered for PubMed in February 2012). Internationally renowned journals such as *BMJ*, the *New England Journal of Medicine* and *The Lancet* occasionally publish articles by Nepalese researchers. Without HINARI, such achievements would have remained a dream. ■

*Paediatrician at Shree Birendra Hospital, Kathmandu

Viet Nam

Dr Nguyen Duc Chinh*

Knowledge gained through Research4Life's HINARI programme is enabling Nguyen Duc Chinh to help patients, medical students and his workmates at one of Viet Nam's leading hospitals.

Viet Duc hospital is the leading surgical centre in Viet Nam. It has 900 beds, more than 1000 staff, 17 clinical departments, and 30 operating tables. Annually, medical staff conduct more than 160 000 consultations and 30 000 operations on more than 40 000 patients. As well as providing patient care, the hospital is engaged in research, public health and teaching, and is a training centre for Hanoi Medical University and several other medical schools nationwide.

Central to the hospital's mission is its research, which is crucial for staying up to date with, and providing, the best possible treatment and diagnosis. Good research, in short, leads to better patient care. Although the health-care system has improved markedly in Viet Nam over the past decade, the country still faces many challenges. One of these is a lack of reliable information technology.

Before gaining access to Research4Life's HINARI programme in 2002, Viet Duc Hospital relied on free public tools, such as Google and PubMed, for literature searches. However, Google is not specialized for medicine and neither Google nor PubMed habitually unearth complete articles. The only other option was to order journals through the mail, which was time-consuming and unaffordable for many Vietnamese physicians.

Practising medicine has now become evidence based



Dr Chinh (centre) and colleagues perform surgery. Access to Research4Life's HINARI programme has led to better outcomes for surgery patients at one of Viet Nam's leading hospitals.



Dr Nguyen Duc Chinh checks on a patient at Viet Duc hospital, Hanoi.

Photos courtesy of Dr Nguyen Duc Chinh

Dr Chinh now uses HINARI not only to update his own surgical knowledge but also to share information with colleagues who don't have access to international journals. Such knowledge is also invaluable in his research. In the last few years, Dr Chinh has been able to increase his research output substantially. He has now published more than 50 papers – including six in international journals – on medical practice, preventive medicine, infection control and pre-hospital care, as well as textbooks for students.

Dr Chinh relied heavily on HINARI to perform his PhD research on complications of intestinal tuberculosis (TB) and surgical treatment. This is particularly important given the high prevalence of TB in Viet Nam, but the relative lack of information on intestinal TB. Through Research4Life, he was also able to perform extensive research on digestive TB, becoming one of very few Vietnamese doctors to have a paper accepted by the prestigious French journal *Annales de Chirurgie*.

"With the information and knowledge I obtain," explains Dr Chinh, "I feel more confident in practising and implementing respected medical expertise from around the world." ■

**Digestive surgeon, Deputy Chief of Planning Department, and Chief of Department of Septic Surgery, Viet Duc Hospital, Hanoi*

Malawi

Geoffrey F. Salanje*

Research4Life's AGORA programme allows Bunda College of Agriculture to help not only staff and students but anybody in Malawi looking for agricultural information.

As head of the library at Bunda College of Agriculture, Geoffrey F. Salanje provides information in support of more than 20 undergraduate and postgraduate programmes. Before 2004, when Bunda's library became the first in Malawi to register for access to AGORA, HINARI and OARE, college students and staff relied on paid access to journals or on public search engines such as Google. The former offered a limited selection of research and required annual funding, and the latter were often restricted to incomplete or unreliable publications. The library could also request publications from organizations such as, FAO, WHO and the Technical Centre for Agricultural and Rural Cooperation (CTA), but the time to both make requests and receive the information was prohibitive.



Geoffrey F. Salanje in the Bunda College of Agriculture Library.

Photos courtesy of Geoffrey F. Salanje



Research4Life's AGORA programme has transformed Mr Salanje's ability to help staff, students and members of the public find the information they need.

The librarians were stretched to their limits because of users' over-reliance on the library for printed resources and CD-ROMS, given the lack of high-quality scientific information available online. In effect, the library was the only source of information for teaching, learning, research and outreach. Not only has Research4Life reduced the librarians' workloads, but it has also eased pressure on library resources because users can access information online without visiting the library. Mr Salanje and his team have also launched a Question and Answer Service (QAS), initiated by CTA in 2004.

"With AGORA, the library easily responds to requests for information from farmers, researchers, teachers, extension workers and students," explains Mr Salanje. "The service is open to anybody in Malawi who wants information on agriculture, rural development and related subjects. We are convinced that the QAS has improved farmers' produce, research outputs and results, and the acquisition of teaching, extension and learning skills in Malawi."

I no longer ponder about where to search for scientific information requested by researchers

Bunda College of Agriculture was recently selected to host regional PhD programmes in aquaculture and fisheries science, and agricultural and resource economics. One of the main reasons for this achievement was the availability of relevant and current information resources. These programmes had their first intake in 2009.

On a personal note, Mr Salanje says that AGORA, HINARI and OARE have contributed to his own career advancement, simplifying his work and allowing him to gain skills and expertise in searching for and retrieving online information. ■

**Head Librarian, Bunda College of Agriculture, University of Malawi, Lilongwe, Malawi*



Photo courtesy of Dr Gamal Khalafalla Mohamed Ali

Sudan

Dr Gamal Khalafalla Mohamed Ali*

By unlocking the door to world-leading science, Research4Life has helped Gamal Khalafalla Mohamed Ali lead Sudan's shift from short-term policy decisions to evidence-based policy-making that considers the long-term health interests of the Sudanese people.

As Director General of Sudan's Central Medical Supplies Public Corporation, Gamal Khalafalla Mohamed Ali (at left in the above photo) heads the national government agency responsible for medical supplies to all public health institutions. If any role requires access to reliable, up-to-date information on medicines, this is it. His job requires him to advise on how medical supplies might best be regulated, organized and financed to ensure that millions of people have the best possible chance of staying healthy. He and his agency colleagues formulate, implement and evaluate health policies and reforms, and develop programmes and systems, the success of which directly influences the well-being of the Sudanese people.

Dr Khalafalla works hard to base his policies and proposals on evidence, using the best research available to deliver programmes that have the greatest possible chance of succeeding. But it wasn't always

that way. Ten years ago, when he worked at the Khartoum State Ministry of Health, basing policies on evidence simply wasn't possible. For a start, the ministry subscribed to a single, solitary journal. Without access to evidence, policies were formulated as a response to short-term pressure or prevailing political circumstances, with the long-term implications more or less ignored.

This approach to policy-making is less than ideal in any country, let alone one that has some of the largest health problems in the world. Poverty in Sudan is deep and widespread, and its health indicators (e.g. progress towards the United Nations Millennium Development Goals), although comparable with other countries in sub-Saharan Africa, rank below those of the Middle East and North Africa. But how can you base policies on evidence if the evidence is not available?

A dramatic turn

Things took a dramatic turn for the better in 2002, when the World Health Organization gave the Federal Ministry of Health access to Research4Life's HINARI programme. "As a policy-maker, I use research published in HINARI for formulating research-based policies," says Dr Khalafalla. "I have written many proposals, and most of these find their way to implementation. A major reason for this, I think, is the evidence that underpins the proposals."

“ To me HINARI is like water and oxygen; it is vital for me

Dr Khalafalla describes the move to evidence-based policy as a qualitative leap in the government's way of thinking. "It exposes us to the international research community," he says. "With just a click, you have access to high-quality international publications."

Using the published scientific research available through HINARI makes it much easier to convince other policy-makers at federal and state levels about the merits of his agency's proposals.

Numerous evidence-based proposals developed by Dr Khalafalla and his agency in the past few years have since become policy in Sudan. These include:

- the introduction, for the first time, of clinical pharmacy services;
- a draft 25-year pharmacy strategic plan, adopted by the national government as an official document;
- a policy for the development of a national pharmaceutical industry, which has been adopted by government and has already engaged two foreign investors;
- the establishment of an independent medicine regulatory authority, the National Medicines and Poisons Board.

Better regulation

Access to publications such as the *Journal of the American Medical Association* has further boosted pharmaceutical regulation in Sudan. For example, a 2008 paper on "Safety-related regulatory actions for biologicals approved in the United States and the European Union" helped Dr Khalafalla convince colleagues in the Medicines Registration Committee to develop requirements for the registration of biological products.

Research4Life has also been instrumental in Dr Khalafalla's work to build pharmaceutical capacity in Sudan. The government supported his agency's proposal to implement a postgraduate fellowship programme in managing pharmacy services. As of 2011, 34 people have graduated, with another 32 fellows



Gamal Khalafalla Mohamed

The Impact of the RDF on Accessibility of Medicines

Experience of Khartoum State - Sudan



Access to medical literature through HINARI allowed Dr Khalafalla to publish an important book on access to medicines in Sudan.

currently studying. He has also led the development of the syllabus for a master's degree in public health, and his proposal for the establishment of a programme in pharmacy professional development was accepted by the Sudanese Pharmacists' Union and is now being run by the Federal Ministry of Health.

Finally, the past decade has seen Dr Khalafalla advance his own pharmaceutical research. Despite graduating in the early 1990s, a lack of up-to-date literature meant that it was not until 2004 that he published his first paper. With that problem now in the past, he has published an important book – *The Impact of the RDF on Accessibility of Medicines: Experience of Khartoum State* (pictured) – along with 10 other academic papers. He is also able to keep abreast of the latest developments in other areas of interest, including those in which he teaches, such as pharmacoeconomics, medicines supply and drug regulations. ■

* Director General of Sudan's Central Medical Supplies Public Corporation and qualified pharmacist

Democratic Republic of the Congo

Dr Abdon Mukalay*

Since gaining access to Research4Life's HINARI programme, research and teaching at the University of Lubumbashi has flourished.

The University of Lubumbashi's School of Public Health is one of the most productive health research institutes in the Democratic Republic of the Congo. The last few years have seen a steady stream of research that has contributed to the country's progress in public health.

The school's recent work includes a study on population exposure to metals that helped convince political leaders to strengthen environmental monitoring, and a study on the determinants of malnutrition, which has revealed the need for water in each city home to reduce malnutrition and control outbreaks of infectious diseases such as cholera. The school "mapped" Lubumbashi's health to provide a national reference point. And research on HIV infection in pregnant women is helping husbands participate in managing the disease.

According to Abdon Mukalay, general practitioner and the school's academic secretary, much of this would have been impossible without HINARI. When the school was established in 2003, it did not subscribe to a single international journal. Students and staff had access to extremely limited and often out-of-date references, and their work suffered accordingly. In fact, the best way to access the information required to perform research and publish papers was to seek scholarships or work abroad. But the expense, and the problems of obtaining visas, meant that route was open to a select few.

“ The overall quality of written work – from papers, books and doctoral theses to lecture notes and undergraduate assignments – has improved

In 2006, Dr Mukalay successfully applied to register the School of Public Health with Research4Life. All staff members and postgraduate students were given access, and HINARI training is compulsory for students and teachers.

Now able to freely obtain current literature, staff no longer need to leave the country to perform and publish research to international standards. Consequently, they are making fewer trips abroad and are publishing more papers. And, with travel costs falling, more money can be directed to local needs such as laboratory expenses, staff salaries and operating costs.

“Through HINARI,” says Dr Mukalay, shortly to complete a PhD on child malnutrition in Lubumbashi, “the scientific work in the school is escalating, and is being performed faster. I am certain that the quality of teaching and research, and the level of community support, will continue to increase.” ■

**Academic Secretary, School of Public Health, University of Lubumbashi*

Research4Life's HINARI programme has helped boost public health in the Democratic Republic of the Congo.



WHO/Christopher Black

Ethiopia

Dr Eric Gokcen*

Without Research4Life's HINARI programme, a young cancer sufferer at CURE Ethiopia Children's Hospital would have lost one of her legs.

In July 2010, a 22-year-old university student arrived at the CURE Ethiopia Children's Hospital with a painful, swollen leg. She was there for a second opinion after receiving grim news at another hospital. Her previous doctors had diagnosed a rare form of cancer in her tibia, or shinbone. Treatment, they had told her, was available in other countries, but not in Ethiopia. The alternative – and her only choice, given she did not have the money to travel – was to amputate the leg.

Eric Gokcen, an orthopaedic surgeon at the CURE Hospital, confirmed the diagnosis. However, in 12 years working in the United States, Dr Gokcen had never come across this type of cancer. Despite having access to some excellent books in the hospital library, he had found very little information on treatment. Luckily, a previous job at a sister hospital in Kenya – with limited internet and out-of-date textbooks – had made him aware of HINARI, which has been available at the Addis Ababa CURE hospital since it opened in 2009.

The medical literature accessed via HINARI revealed a way to treat the cancer without amputating the affected leg. This involved removing the cancerous section of the bone and grafting in a donor bone in its place. Fortunately, a United States company provided the donor bone, and Dr Gokcen and his team successfully performed the graft. As of October 2011, the patient had healed from the surgery, was pain-free and had returned to university.

“ I frequently access HINARI to find articles and information that helps me care for our patients

Dr Gokcen notes that having access to the most current literature allows medical staff to offer patients the best possible care. Further, as a relatively new facility, the hospital's research programme is

benefiting enormously from the ability to perform complete literature searches. And as a training site for orthopaedic residents, HINARI is an invaluable teaching aid for both the hospital and, ultimately, the medical professionals across the country.

“For the physicians here, the extensive access to current literature available on HINARI is a vital step in bringing medical care in Ethiopia up to recognized world standards,” says Dr Gokcen. “We now know that any future research we do will be able to add significant knowledge to the medical community.” ■

** Chief Orthopaedic Surgeon and Medical Director, CURE Ethiopia Children's Hospital, Addis Ababa, Ethiopia*

By providing up-to-date literature, Research4Life's HINARI program is helping patients at CURE Ethiopia Children's Hospital.



WHO/Petterik Wiggers





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