

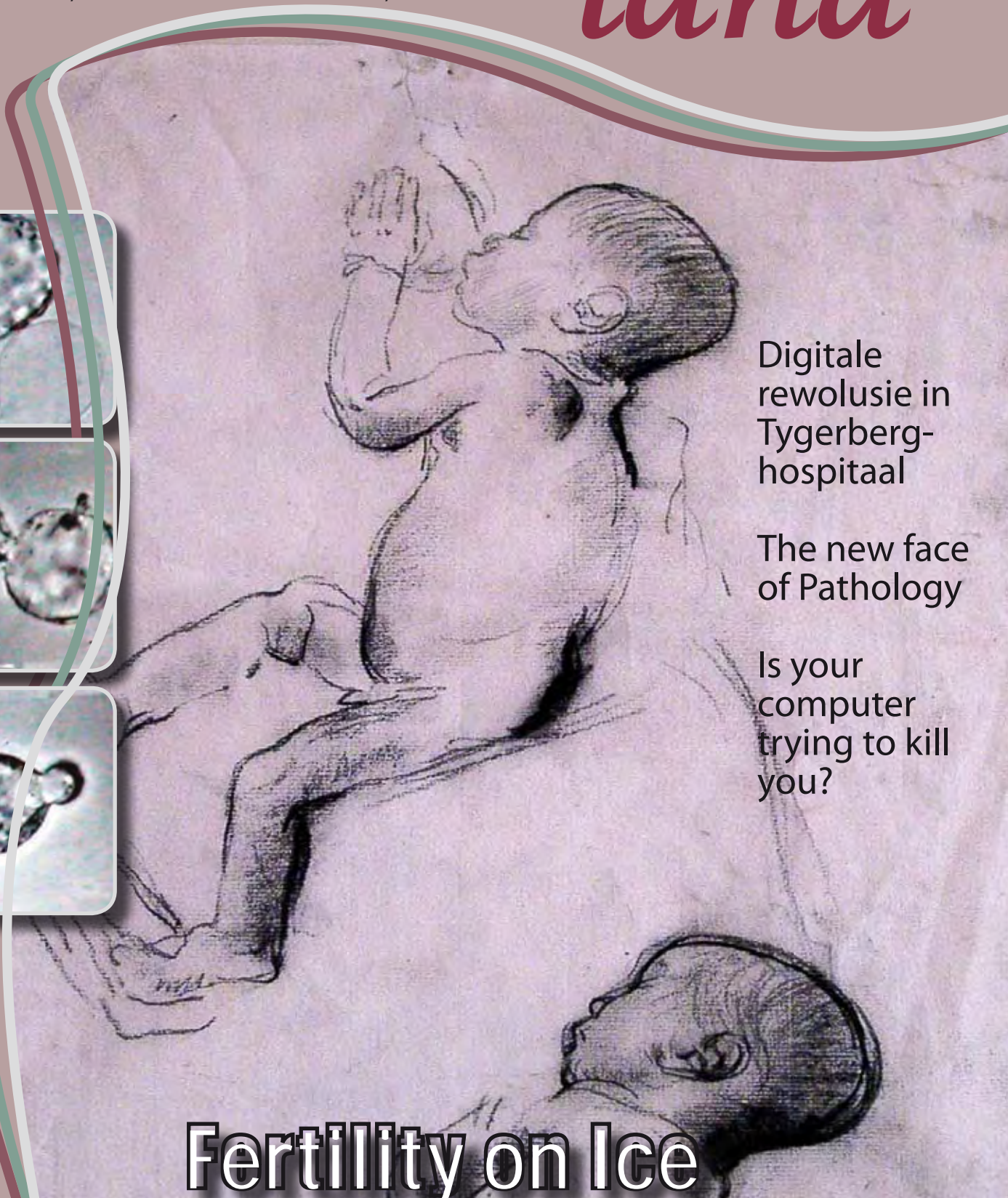
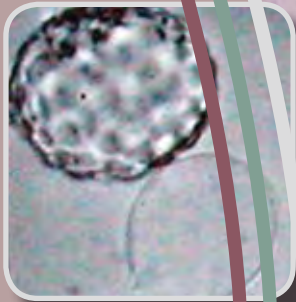


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Digitale
rewolusie in
Tygerberg-
hospitaal

The new face
of Pathology

Is your
computer
trying to kill
you?

Fertility on Ice

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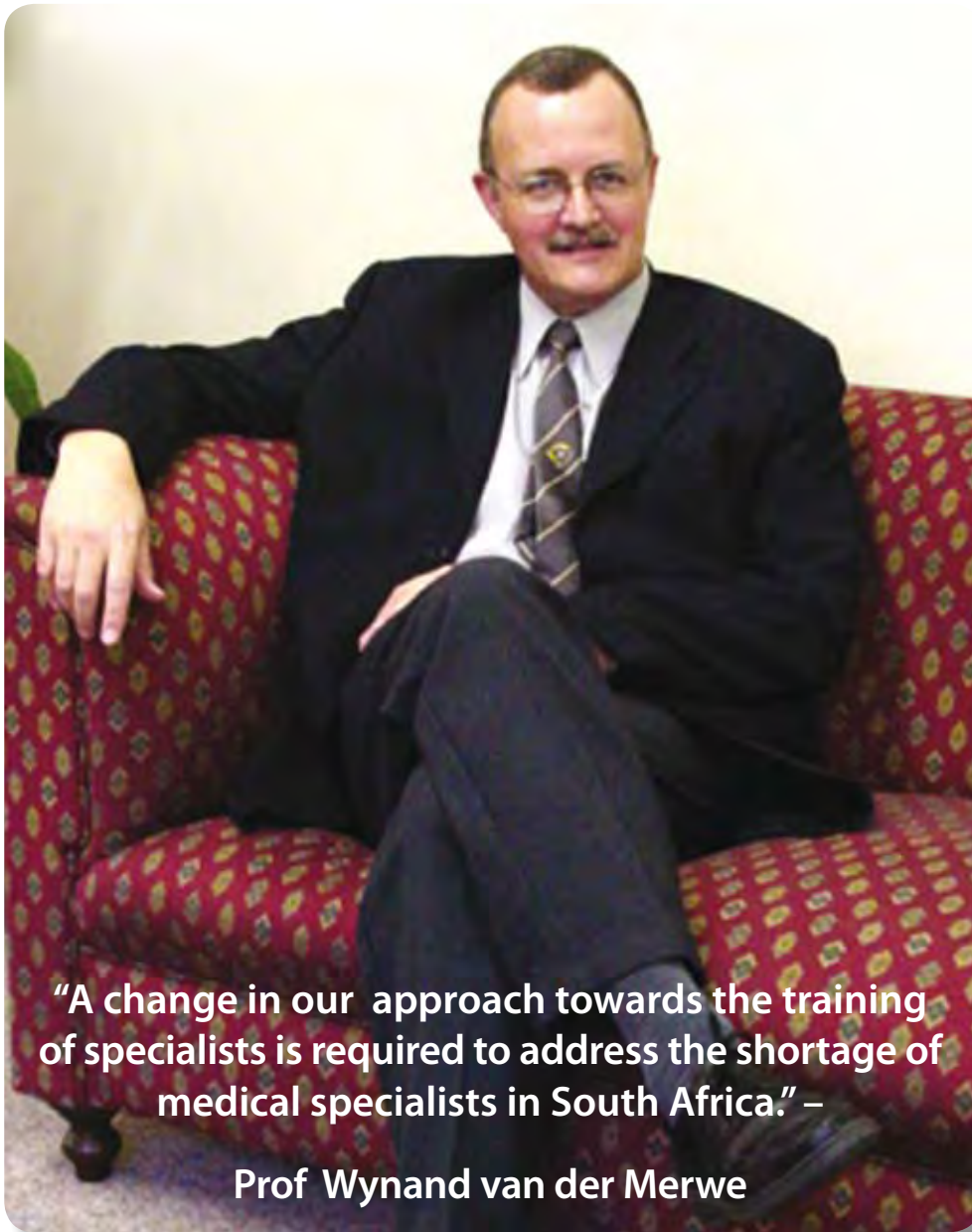
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Cover: *Study of a New Born Baby* by
Sir Jacob Epstein

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“A change in our approach towards the training of specialists is required to address the shortage of medical specialists in South Africa.” –

Prof Wynand van der Merwe

Medical schools in South Africa will have to increase their outputs of trained medical specialists by at least 50 over the next 15 years if the country wants to at least begin to approach a reasonable international norm of a specialist to population ratio of 15 specialists: 100 000 population within the next 15 years.

“Anything less than such an ambitious target is likely to sustain the currently dwindling ratio and could seriously affect the health status of South Africans,” says Prof Wynand van der Merwe, Dean of the Faculty of Health Sciences, Stellenbosch University.

While the shortage of specialists has become a generally accepted fact in the South African health care environment, no reliable figures have been available to calculate the extent of the shortage. However, by using statistics and projections from various sources, Van der Merwe concluded that “the authorities who should be aware of the exact extent of the current shortage, do not have the necessary information currently and hence no planning has yet been done to address this problem.”

He furthermore concludes that in a country, already compromised by severe shortages of health care personnel, the threatening shortage of medical specialists may well contribute to the health services’ equivalent of “the Eskom challenge” if this reality is not addressed as a matter of urgency.

SPECIALIST SHORTAGE

a looming threat

Against the background of a growing population, major shifts in the burden of disease profiles and the impact of two major epidemics in the increasing morbidity and mortality due to HIV/AIDS and Tuberculosis, this spells serious trouble for the country as a whole, he says.

In his own efforts to review current and future specialist capacity needs in the South African public health sector, Van der Merwe used statistics generated by organisations such as the National Treasury, the Financial and Fiscal Commission (FFC), the SA Health Review (SAHR), the Health Professions Council of SA (HPCSA) and the South African Medical Association (SAMA).

Thus figures from the *SA Health Review* suggest that the country had a specialist/population ratio of 9.2:100 000 (data used by the Financial and Fiscal Commission suggest a ratio of 8.7:100 000) in 2006 and that 29.9% of medical practitioner posts in the public sector were vacant. At the same time, the distribution of doctors was disproportionately skewed with some provinces in the country being compromised significantly more than others.

Statistics from the HPCSA indicate that there were 3 298 specialists practicing in the public sector in 2006 and 5 727 in the private sector. A SAMA data base, on the other hand, shows 2 154 specialists practicing in the public sector and 4 573 in the private sector. While it is difficult to validate the veracity of the different sets of statistics, Van der Merwe believes that all of them probably underestimate the reality of the situation. For instance, the exact number of doctors who are leaving the country is not known since some of those who leave, continue their registration with the HPCSA and often provide a South African address, making it difficult to know exactly how many have left, either temporarily or permanently. There are also clear indications that another wave of doctors and specialists have emigrated in the course of 2008.

Using the Health Review's estimate of public service deficit of about 30% vacant posts, together with a current FFC estimate of 8.7/100 000 specialist-population ratio and the current annual output of approximately 450 specialists by South Africa's eight medical schools, Van der

Merwe came to the conclusion that all the country's medical schools will have to increase their annual registrar admissions by a massive and sustained 58% to even approach a 15 specialists:100 000 population norm in 15 years.

"These assumptions were not influenced by private sector demands or indeed any other need/demand or supply drivers. I did not consider possible changes in current staff exit trends and I based the estimate on static population figures, while the current population growth in the country in fact averages 2.2% per year. My conclusion is thus based on very conservative demand: supply assumptions. It is also important to note that bridging the gap (with regard to training requirements) will only be achieved in 2023 after 15 years of sustained increased intake, assuming the increases start immediately."

In practical terms it means that the SU FHS and other faculties in the country will have to increase their intake of registrars by more than 50% immediately to erase the current deficit in terms of vacant posts, let alone approaching a more ambitious target of 15:100 000 (specialists: population ratio). At present none of the training institutions or tertiary training hospitals have the 'trainers', facilities, equipment or patients/case mix to deal with such a dramatic increase.

Van der Merwe says there are no simplistic answers to these problems, but if they are to be solved, there will have to be a change in our current approach toward the training of specialists, and the critical factor for the success of such a change will require participation and contributions from all stakeholders.

Training in the private sector

He points out that some quick and early initiatives and changes may well hold important benefits in the short term, i.e. using level 2 services outside current academic complexes much more extensively, as well as significant use of the private sector as part of the training platform for registrars. He points out that Australia is already using its private health service, with its wealth of experienced specialists, very successfully as a training platform for specialists.

"We may also have to reconsider the current registrar: specialist requirement (2:1 for specialist and 1:1 for subspecialist training) by assigning more registrars per specialist in particular disciplines.

"In the medium term, current health sciences faculties should also consider the possibility of establishing satellites in other, under-served provinces and in the longer term, it will become necessary to establish new faculties and academic health complexes in those provinces, even though it will be a very costly exercise"

At present, the Western Cape is playing a pivotal role in registrar training. Approximately 550 registrars (excluding registrars in Pathology disciplines) are in training during any particular year at the universities of Stellenbosch and Cape Town. Of these, about 120 qualify every year. Among the large variety of specialisation areas in Medicine, some categories such as Anaesthesiology, Emergency Medicine, Orthopaedics, Psychiatry and Surgery, are likely to lose registrar posts, while others such as Radiology, Obstetrics and Gynaecology, Paediatrics and Radiation Oncology are likely to gain posts if the Comprehensive Service Plan (CSP) of the Western Cape Health Department is fully implemented in its current form.

Bed numbers and associated staff (including specialists and registrars) numbers in the CSP are based on provincial service needs and the projected available budgets, and do not take cognisance of national training needs for health professionals, including specialists, says Van der Merwe. "The potential influence of this and other provincial restructuring processes on specialist numbers, that are already under significant pressure, should be of concern for all South Africans."

Van der Merwe emphasizes that involvement and leadership at the highest possible level in the country would be required to address this challenge successfully. Since this is a matter of national importance, the involvement and commitment of both the national departments of Education and of Health, together with other important stakeholders such as the universities and provincial health departments would be absolutely vital. Delaying a national planning process, it appears, is a luxury the country cannot afford.



Foto: SSFD

Dr André van der Merwe demonstreer die nuwe laparoskopiese tegniek.

UROLOGIE

Sleutelgat-chirurgie vir nierskenkers

'n Laparoskopiese nefrektomie hou belangrike voordele in, vir die skenker sowel as die ontvanger, tydens nieroorplantings.

Die baanbrekerswerk wat die Afdeling Urologie sedert 2001 reeds doen op die gebied van laparoskopie – oftewel sleutelgat-chirurgie – is onlangs voortgesit toe dr André van der Merwe en spesialiste uit die Afdeling vir die eerste keer 'n laparoskopiese nefrektomie in Suid-Afrika gedoen het om 'n skenkernier te verwyder.

Hoewel laparoskopie vir 'n geruime tyd reeds as chirurgiese tegniek in dissiplines soos algemene chirurgie en ginekologie gebruik word, is dit vir die eerste keer in die 1990's deur uroloë in die buiteland ingespan om 'n nier te verwyder.

Spesialiste in die US se Afdeling Urologie het in 2001 reeds begin om hul vaardighede op hierdie terrein in die proefdierlaboratorium te slyp en die eerste klein laparoskopiese operasies op pasiënte word sedert 2003 op pasiënte in Tygerberg-hospitaal gedoen.

Tydens laparoskopiese chirurgie word

'n baie dun teleskopiese instrument – 'n sg laparoskoop wat niks dikker as 'n sentimeter is nie – deur 'n klein velinsnyding in die buikholte geplaas om die buikorgane waar te neem. Die beeld vanaf die teleskoop word met 'n veseloptiese kabel na 'n videomonitor gelei vanwaar die chirurg die operasieveld sien. Chirurgiese instrumente word dan deur addisionele velinsnydings aan weerskante van die laparoskoop in die buikholte geplaas en die operasie word dan met hierdie instrumente uitgevoer.

“'n Laparoskopiese nefrektomie kan nierskenkers met 40 persent laat toeneem en lang dialise waglyste word gevolglik korter.”

Dr André van der Merwe

Die leier van die eerste laparoskopiese nefrektomie, dr André van der Merwe, is 'n uroloog, laparoskopiese spesialis en senior lektor in die FGW. Hy wys daarop dat nieroorplantings die enigste koste-effektiewe metode is vir die behandeling van eindstadium nierversaking. In die verlede is skenkerniere hoofsaaklik van breindood skenkers gebruik, maar die afgelope tyd word niere meestal van familieledede ontvang. 'n Laparoskopiese nefrektomie hou belangrike voordele in vir die skenker sowel as die ontvanger tydens nieroorplantings.

Die groot sny wat gewoonlik in 'n pasiënt se flank gemaak word om 'n nier vir 'n oorplanting te verwyder, skrik baie potensiële skenkers af. Dit kan ook 'n bulting in die flank veroorsaak en is normaalweg baie pynlik. 'n Verdere negatiewe faktor is dat die skenkers dikwels vyf tot sewe dae in die hospitaal moet deurbring en as gevolg van pyn, met morfien seeder moet word. Dit alles veroorsaak dat ontvangers – gewoonlik pasiënte met eindstadium nierversaking – dikwels vir jare met dialise moet saamleef.

As die nier egter laparoskopies verwyder word, het die pasiënt net 'n paar klein snytjies in die sy en word hospitaalverblyf aansienlik ingekort. Die eerste skenker wie se nier dmv 'n laparoskopiese nefrektomie verwyder is, is na slegs drie dae in die hospitaal ontslaan. Die proses is ook baie minder pynlik vir die skenker as die tradisionele nierverwydering. Van der Merwe sê daar is bewyse dat hierdie metode aanleiding kan gee tot 'n toename van bykans 40% in skenkers met 'n gevolglike positiewe invloed op dialise waglyste.

The new face of Pathology

The Department of Pathology now offers new, sophisticated services and expertise to meet the demands of niche markets or the requirements of clinicians.

In recent years, divisions in the SU's Department of Pathology in the Faculty of Health Sciences, have established research, new services and international partnerships that are in many ways unique to South Africa and the sub-continent.

Many of these initiatives form part of a new research facility that was established within the Department as an extension of its vast NHLS (National Health Laboratory Service) service platform.

Formally known as the Pathology Research Facility (PRF), this new facility aims to enhance excellence in research, training and relevant pathology services in all the pathology disciplines locally, nationally and internationally, and has at its disposal the rare expertise of academics who are regarded as local and international leaders in various disciplines.

The executive head of the Department, Prof Johann Schneider, says the PRF is consolidating previously fragmented and often duplicated resources in the various pathology disciplines to create a more efficient, integrated and cost effective academic platform for research, training and appropriate service related functions in the Department. This includes Anatomical Pathology, Chemical Pathology, Forensic Medicine, Haematopathology, Medical Microbiology, Medical Virology, Immunology and Molecular Pathology.

"Through its close links with pathology and its interaction with clinicians and the allied health sciences, the PRF strives towards efficient, cost effective and one-stop support for the training of post-graduate students, research and specific pathology services to meet the demands of niche markets or specific clinical requirements," Schneider says.

The PRF infrastructure makes provision for molecular pathology; a placement

laboratory, and a dedicated laboratory for the diagnosis and research of prion diseases (see accompanying article). While the laboratory is US-based, it operates in close collaboration with the National Health Laboratory Service (NHLS) and adds value to the limited academic pathology platform that is linked to the NHLS service laboratory and existing university-based laboratories at Tygerberg. The facilities and expertise already available in the Department of Pathology, including the excellent facilities for molecular pathology in the Medical Virology division, form an integral part of the PRF.

In this edition of *Tygerland*, we highlight exceptional initiatives from three divisions in the Department – namely Neuropathology, Virology and Anatomical Pathology - with special focus on the contributions these initiatives have made in South Africa, Africa and internationally. Other new training initiatives, diagnostics and services, include:

- **Laboratory training:** The PRF supplements the NHLS Service Laboratory and supports the teaching and training of registrars, scientists and technologists in various aspects of pathology that are not available or adequate in the routine service laboratories. This includes training in laboratory techniques to HonsBScMedSc (Pathology) students and specific training in molecular pathology techniques.

- **Molecular-based tests:** The PRF offers diagnostic support, training and research in all the pathology disciplines including the development and provision of molecular-based tests that are relevant to diagnostic pathology. Further tests will soon be available for diagnostic as well as research purposes, i.e. real time PCR based on the latest technology. Experts in



Prof Johann Schneider

the Department handle specific requests from clinicians and researchers regarding molecular pathology.

- **A Placement laboratory** that caters for specific research demands related to any of the disciplines in pathology. Depending on the nature of the project, equipment and support can be established to meet the specific requirements of the researcher or project. A small procedure room is available for procedures such as fine needle aspiration biopsy and collection of blood samples.

- **Genome research innovation:** Dr Maritha Kotze joined the PRF to promote genome research innovation amongst students, researchers and clinicians. Thus the PRF offers comprehensive diagnostic and risk management tests as part of a service component of research projects, specifically designed to bridge the traditional gaps between human genetics, clinical medicine, diagnostic pathology and other disciplines such as nutrition.

Through the PRF, the Department of Pathology has established collaboration with other academic institutions and the private sector. Such collaboration will expand the PRF's capacity to offer unique services and support that meet the demands of niche markets and research projects. For further information on any of these services, please contact the Department of Pathology on (021) 938 4041 for contact details of any of the various laboratories and services.

'Mad and other fatal prion diseases

Prion Diseases represent some of the scariest medical problems of the last two decades – mainly as a result of the emergence of variant Creutzfeldt-Jakob disease, generally known as 'mad cow disease'. In this article, Prof Richard Hewlett, head of the country's only neuropathology service – based in the SU Faculty of Health Sciences – looks at this group of diseases from a scientific, historical and South African perspective.



Prof Richard Hewlett

Until the late 1980's, Creutzfeldt-Jakob and the other so-called spongiform encephalopathies were so rare that they were almost unheard of outside the medical profession – until an epidemic outbreak of bovine spongiform encephalopathy (BSE) in the cattle in the United Kingdom propelled the disease onto the front page of newspapers world-wide.

Because the suspected cause of BSE was transmitted in cattle feed, the British government banned all feeding products that may contain diseased tissue. However, at the outbreak of the epidemic the infected cattle had already entered human food chain and in the middle of the 1990's, several people were diagnosed with a variant form of Creutzfeldt-Jacob Disease which was traced to meat from cattle infected with BSE.

The South African perspective

In Africa and South Africa, prion diseases represent a neglected field of interest and research, and there are no figures available on the incidence of these diseases locally, or in other parts of the continent. For instance, although only two cases of Creutzfeldt-Jakob Disease have been diagnosed here at the SU FHS in 2007, in terms of our population and the incidence of the disease worldwide, there should be about 40 cases a year, Prof Hewlett says.

He believes that many cases are not diagnosed because they do not come to the attention of

specialist physicians, and neurologists in particular.

The global interest in prion diseases, together with the presence of the country's only specialist neuropathology service here at SU Faculty of Health Sciences, created a unique opportunity to establish a dedicated prion laboratory within the department of Anatomical Pathology.

International recognition for the laboratory is the result of collaboration between Hewlett, who heads the SU Neuropathology Unit, and Prof James Ironside of the National Creutzfeldt-Jacob Disease Surveillance Unit at the University of Edinburgh, United Kingdom.

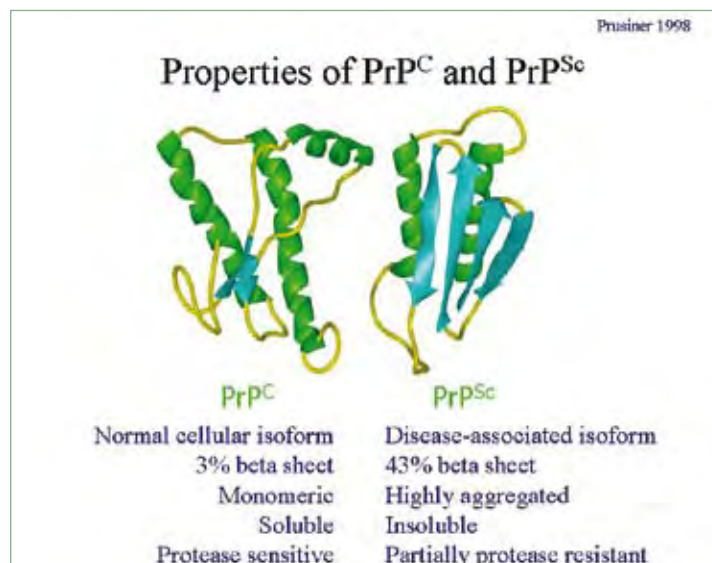
What is a prion disease?

Hewlett explains that prion diseases are a group of related disorders that lead to degeneration of the brain characterized by severe loss of nerve cells combined

with a characteristic form of vacuolation which has come to be known as "spongiform" change. The diseases are widespread among both domestic and wild animals, where they have a long history of livestock depredation, especially in sheep, which display a characteristic neurologic illness known as scrapie. In humans, these diseases lead to a rapidly evolving, fatal dementia which is terrifying to the patients' relatives.

"We all have loads of prion protein. It is present in all mammalian tissue," says Hewlett.

"In a manner which is still a mystery, normal prion protein can undergo a process of folding which then causes it to take over and finally replace all the normal resident molecules, leading to cell death, especially in the central nervous system. Because the earliest work on transmissibility used the



Left: A molecular construct of PrP showing normal and 'infective' forms (courtesy Prof James Ironside).

COW'

under a Stellenbosch microscope

tissues from affected sheep, the abnormal prion protein is now universally designated PrPsc.

The precise structure of the misfolded prion protein including the gene locus where the mutation occurs in sporadic human disease, was shown by an American scientist, Stanley Prusiner. This work, which was awarded the Nobel prize, also explained a unique feature of prion diseases, where inheritance and infectivity are combined. Hence derivation of the current scientific term "transmissible spongiform encephalopathies".

'Mad Cow' Disease

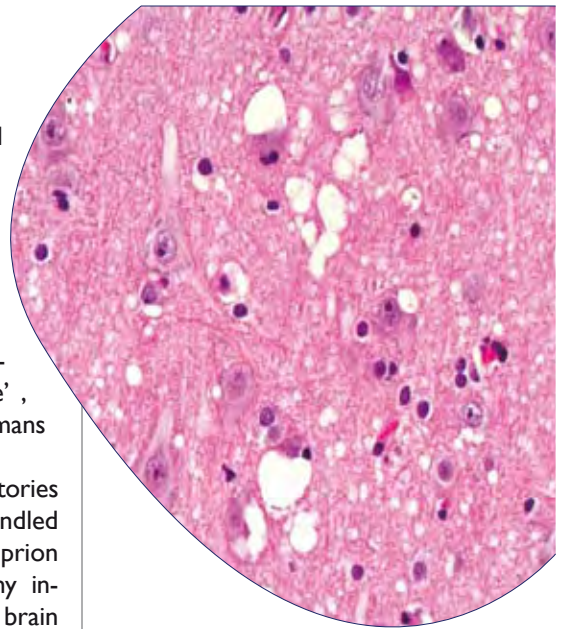
Of the prion diseases affecting humans, the most prevalent form is the result of a sporadic mutation best known as Creutzfeldt-Jakob disease or "CJD", a much rarer form being characterised by fatal insomnia. CJD is diagnosed fairly confidently by neurologists when confronted with the clinical picture of dementia combined with small jerking movements of the limbs, and a specific pattern of abnormal electrical discharge on the electroencephalogram.

However, world interest has focused on a form of the disease acquired from the ingestion of 'infected' beef, first identified in Britain in the 1990s.

As a result of media publicity, the condition of bovine spongiform encephalopathy has come to be popularly known as 'Mad Cow Disease', and transmission bovine PrPsc to humans is now referred to as Variant CJD.

For many years, pathology laboratories in countries all over the world, handled tissues from patients dying from prion disease on a routine basis. In many instances, the diagnosis was made on brain biopsies performed by neurosurgeons. However, the advent of mad cow disease caused widespread hysteria in Europe and America, including the outright refusal of pathologists and laboratory technologists to handle and process tissues suspected of harbouring PrPsc.

As a direct result of this reaction, dedicated laboratories were established, with stringent protocols. In the UK, the National Creutzfeldt-Jakob Surveillance Unit, was situated in Edinburgh under



Above: A histologic preparation from a brain biopsy showing large numbers of 'holes' imparting a spongy appearance. The slide is part of the SU's Clinical Neuroscience picture archive.

Prof James Ironside. The new prion laboratory at SU FHS has been designed and equipped according to specifications provided by the Edinburgh Unit, and handling of tissues conforms to the international protocol. Diagnosis is based on the use of immunohistochemical methods, which are extremely expensive, and need to be carried out under careful control, by experienced technologists.

The SU laboratory is intended to serve as a national referral center, and ultimately to engage in clinical research. In Cape Town, the laboratory collaborates with UCT Health Sciences through Dr Marc Combrinck of the Groote Schuur Hospital Neurology staff, who recently returned from Oxford where he took an active part in Prion research. Currently a database is being drawn up to identify all previous cases of CJD diagnosed at both teaching hospitals, after which material will be re-examined for routine documentation and teaching.

Interested clinicians and researchers can contact Prof Richard Hewlett at 0219389457/ rhh@sun.ac.za or Dr Dan Zaharie at 0219389535/ sdz@sun.ac.za



An international expert on Prion diseases, Prof James Ironside (4th from the left, at the back) attended the opening of the Prion Laboratory in the SU Neuropathology Unit in 2007. With him in the photo are among others, Prof Johann Schneider, head of the Department of Pathology (2nd from the left), Prof Richard Hewlett, head of the Prion Laboratory, the Dean of the FHS, Prof Wynand van der Merwe, and other members of the SU Faculty of Health Sciences.

Virology

Searching for HIV's *holy grail*

For more than two decades, the search for a vaccine against HIV/Aids has been the holy grail for scientists across the globe – and Stellenbosch University is currently playing a pivotal role in one of the latest and largest efforts by an international consortium of research institutions to design safe and effective vaccines to combat the epidemic.

Breaking new ground in the field of vaccine development, SU's Virology Division – as part of a \$327 million global HIV vaccine research effort – recently became the first institution in South Africa and Africa to start collecting samples of recently transmitted HIV strains from locations in the Western and Eastern Cape, for storage in a state-of-the-art research cryorepository on the Tygerberg Campus. This collection will eventually form part of a global collection of HIV specimens which will be shared worldwide by collaborating laboratories in a renewed effort to develop HIV vaccines through the application of new technologies, concepts and approaches.

The Virology Division in the SU Faculty of Health Sciences is one of 13 partners in Global HIV Vaccine Research Cryorepository (GHRC) group, coordinated by the Fraunhofer Institute for Biomedical Engineering in Germany and funded by the Bill and Melinda Gates Foundation.

As one of five primary sites within the consortium, the Division's premises on the Tygerberg Campus was recently equipped with a new cutting-edge laboratory and one of the most modern cryorepositories in the world. The official opening of this facility was attended by renowned international scientists from the consortium as well as representatives of the Gates Foundation.

According to the head of the Virology Division, Prof Wolfgang Preiser, Virology at the FHS is one of the consortium's two primary sites in Africa and was asked to participate in the project because it engages in routine, as well as scientific research on HIV/Aids, boasts a large component of skilled staff, modern equipment and a busy diagnostic section.



The cryostorage tank is equipped with a special access tower (above) with computer control for the deposit and retrieval of the HI virus samples.

Preiser and Dr Corena de Beer, who heads the Stellenbosch GHRC project, explain that the new facility comprises the highly sophisticated Chameleon laboratory, equipped with electronic equipment to ensure optimal adherence to standard operating protocols and specialised software for storing of data such as cell counts and for electronic labelling and tracking of

HIV samples. "For instance, when a sample is stored in the cryorepository, all information about it and all details, generated in the lab, are stored on an electronic chip that is attached to and goes into the tank with the sample."

The cryostorage tank is equipped with a special access tower with computer control for the deposit and retrieval of the HI virus samples and a workbench that allows the handling and freezing of specimens in a controlled environment. Most of this unique equipment was tailor-made in Germany at a cost of approximately 100 000 Euro, and shipped to South Africa in huge containers. German engineers spent two weeks at the Faculty to assemble, install and test the equipment – part of it in the bio-safety level 3 laboratory on the 8th floor of the FHS – and tested the safety and efficacy of the system. As scientists of the Virology Division use the new systems for their daily work, they will also provide feedback on shortcomings and other problems, which will allow the Fraunhofer engineers to make further improvements where necessary. They plan to install a similar system at other primary sites to enable the collection of HIV strains from locations around the world. These strains will be available to everyone in the consortium for vaccine development.

De Beer points out that HIV is a highly diverse and rapidly evolving virus. It is therefore important to preserve as many samples of different virus strains as possible, including circulating recombinant forms and viruses made up of genetic information from different strains of HIV.

"Our team will contribute clinical samples, particularly from patients with early HIV infections, to a global HIV specimen collection, stored in a centralized state-of-the-art biobank at the Fraunhofer Institute. At this facility, the samples are



Left: Dr Corena de Beer, who heads Virology's GHRC project, and above, from left to right: Prof Arnold van Zyl of Stellenbosch University, Dr José Esparza of the Gates Foundation, Dr Hagen von Briesen of the Fraunhofer Institute, Germany, Prof Edward Karmanov of the Ivanovsky Institute, Russia, Prof Jean Nachega of the SU FHS and Prof Wolfgang Preiser, head of Virology, at the opening of the new Cryolab on the Tygerberg Campus.

stored under controlled, low-temperature conditions for long-term preservation and for sharing amongst collaborating laboratories. Members of the Collaboration for Aids Vaccine Discovery (CAVD) consortium, of which GHRC is a part, have different roles, ranging from the collecting of blood specimens to the development of vaccines. The partners include, among others, the University of Washington and

the University of Lund in Sweden, as well as other institutions in the United States, Italy and Geneva.

This collaborative effort was established in July 2006 and is funded by the Bill and Melinda Gates Foundation. CAVD

now has access to 18 grants totaling \$327 million over five years, with additional co-funding provided by the Fraunhofer Society and the Ministry of Economic Affairs of Saarland in Germany, and the Swiss State Secretariat of Education and Research.



A laboratory on wheels for Virology

Since one of the vital aspects of the project in South Africa includes the collection of blood samples from recently infected patients in the Eastern Cape, German engineers at the Fraunhofer Institute have designed and built a large and highly sophisticated mobile laboratory, with built-in level 3 safety features, that will be used for this purpose in the Eastern Cape. A prototype is currently being tested in Germany and will be shipped to the Tygerberg Campus in 2009.

The laboratory will be staffed with a dedicated team of local doctors, scientists and counsellors. It is equipped to do CD4 counts and measure viral loads which means that patients can be tested, diagnosed and counselled in this huge laboratory on wheels, and then referred for antiretroviral treatment. "At the same time, the blood of these patients will be processed in the laboratory and sent to the cryorepository," says De Beer.

Placental pathology:

Finding answers for birth tragedies

There is an urgent need for training in this neglected field of Pathology

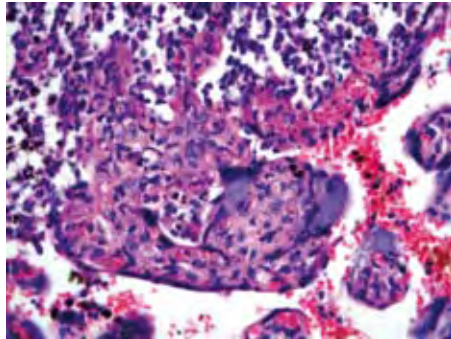
The highest rates of neonatal deaths are recorded in our country and in sub-Saharan Africa annually – and for most of these deaths there is simply no explanation.

In fact, “the most common recorded cause is *Unknown*,” says Prof Colleen Wright, head of the Anatomical Pathology Division in Stellenbosch University’s Department of Pathology.

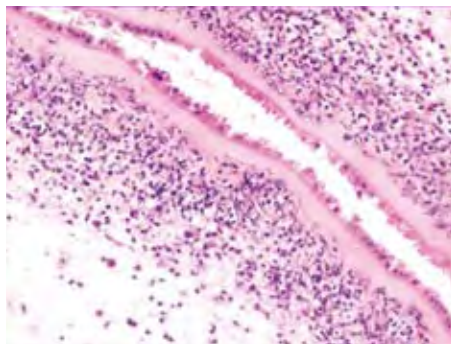
Over the past four years Wright has shown that there is a way to improve our understanding and management of poor foetal outcome, and to assist clinicians with the management of patients who had lost an unborn baby, suffered a stillbirth or experienced other traumas during pregnancy and childbirth: Placental pathology.

“Anything that happens to an unborn baby must go through the placenta,” she explains. “Because the placenta harbours a wealth of information, placental pathology not only helps to determine the cause of adverse pregnancy outcomes, but such information can make an important contribution to the management of subsequent pregnancies, or the acute and longterm management and well-being of neonates,” she says.

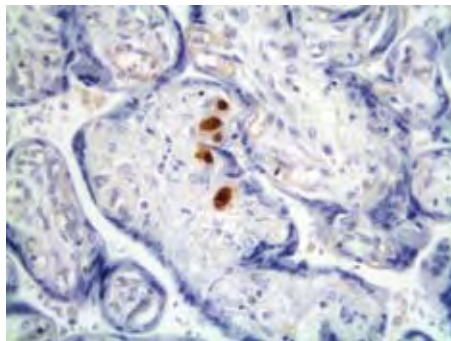
During four years of dedicated placental histology at Tygerberg Hospital, Wright has achieved results that prove the importance of this approach. Like most hospitals in South Africa, Tygerberg prescribes to the Perinatal Problem Identification Programme (PPIP) that records and examines intra-uterine death and stillbirth. PPIP data for 2000 to 2002 records the most common cause of obstetric deaths as ‘Unknown’. Recently the data for Tygerberg was evaluated by Dr Losper in Obstetrics who showed that where the placenta was submitted for histology, the cause of all these unknown deaths was determined. In addition in the 162 perinatal deaths where the placenta was examined, the



Toxoplasma placentitis



Chorioamnionitis



Cytomegalovirus infection of the placenta

placenta changed the clinical diagnosis of cause of death in 58 of these cases. Since 2005, when Wright started showing the contribution examination of the placenta can make, the unit received about 800 placentas for examination annually. She now also receives enquiries from doctors countrywide and has identified an urgent need for training in this neglected field of pathology in South Africa.

She points out that placental pathology can also play an important role to determine the timing of events in cases where the baby is born with brain damage. “For instance, in 90% of babies with cerebral palsy, the labour and birth had nothing to do with the condition; in most cases, the baby was damaged long before labour commenced. In so many of these cases, the mother blames herself for the damage suffered by her baby, or the hospital obstetrician gets the blame. It is therefore extremely important for the parents as well as the clinician, to know if something has happened during the pregnancy that could not be predicted or prevented, i.e. in-utero infection or thrombi in the placenta. At the same time, it can help to answer questions during medicolegal assessments of cases. One of the specific results of the explosion of litigation involving obstetricians in many developing countries was a renewed interest in the potential contribution of histopathological examinations of the placenta”.

Wright says placental causes of fetal and perinatal death may be clinically ‘silent’, i.e. placental maturation defect and thrombotic vasculopathy.

The placenta is the most under-examined, under-utilised and under-appreciated organ in the human body –

Prof Colleen Wright

Furthermore, a multitude of factors, related to fetal, maternal and placental pathology, may play a role in conditions such as intra-uterine growth restriction. By examining the placenta, the pathologist will discover an explanation for many of these problems.

When Wright joined the Faculty and Tygerberg Hospital in 2001, very few placentas were sent to Anatomical Pathology for examination. This has been a problem worldwide, with perinatal pathology being under-utilised by obstetricians and neonatologists globally, despite the potential of the practice. She believes that this may be due to the reluctance of anatomical pathologists to examine the placenta because they receive only limited exposure to placental pathology during their training “and you must know what you are looking for when you examine a placenta.”

Since 2005, Wright and her team have expanded their services to neonatology and established excellent expertise in placental pathology and paediatric autopsies. The need for this service followed closer cooperation and communication with the Perinatal Unit, Obstetrics and Neonatology and the number of placentas received continues to grow – so much so that the Unit has recently acquired the assistance and expertise of Prof ROC Kaschula, retired Head of Paediatric Pathology at Red Cross Children’s Hospital and an internationally acclaimed paediatric pathologist.

Wright recommends an examination of the placenta when:

- A baby is stillborn or has to be admitted to ICU;
- The baby is delivered with signs of hypoxia;
- Labour was prolonged or difficult;
- The baby’s growth is retarded;
- Unexplained preterm labour; and
- If the baby appears to have brain damage.

Placental pathology also plays a major role in Wright’s research



Prof Colleen Wright (left) with a student in the Pathology laboratory.

as a co-principal investigator of the international PASS study (see p21) which investigates the possible role of alcohol in stillbirth and Sudden Infant Death Syndrome. In this regard, she works closely with pathologists and clinicians from the Department of Pathology and Developmental Biology and Pathology Center, Children’s Hospital, Boston, USA. She is also an affiliate professor of Pathology at the Children’s Hospital, Boston and Harvard Medical School.

Because of the value of placental pathology in underdeveloped countries, and the growing need for training in the discipline, Wright and Kaschula will be presenting one-week and three-week short courses in placental pathology for anatomical pathologists in the private and public health sectors, in South Africa and other African countries, from next year. (See details in the article, New academic programmes and courses of the SU Faculty of Health Sciences, on p.14).

Fine needle aspiration for TB

Wright and her team in the Anatomical Pathology Division have also played a major role in establishing fine needle aspiration of enlarged lymph nodes due to possible tuberculosis or other infections, as a highly effective and cost-efficient service – not only at Tygerberg Hospital, but also at peripheral hospitals and clinics.

Wright says this simple procedure to acquire cells has been very successful for the rapid detection of tuberculosis, especially in children. “Many children with pulmonary TB have enlarged lymph nodes and we have found that they tolerate fine needle aspiration very well. Once we have acquired the cells, the provisional diagnosis of TB can be given in two days, and treatment started while waiting for TB culture, which takes up to 6 weeks to complete.”

The procedure also offers a simple solution to the problem of distinguishing between HIV, TB and other infectious agents.

Pathology runs a very successful fine needle aspiration clinic at Tygerberg with rapid on site cytological diagnostic and

consultation services especially in the fields of haematological oncology, respiratory medicine and paediatric oncology. Specialised services include the application of flow cytometry in the diagnosis of lymphomas using material obtained from fine needle aspiration of lymph nodes. In recent years, fine needle aspiration has also led to a significant increase in cost efficient and rapid detection of malignant tumours in many disciplines.

The establishment of this clinic and on site cytological diagnostic services revolutionized the practice of many clinicians and the management of patients, so much so that Wright and her staff have expanded the service to peripheral hospitals and clinics by training of staff in these clinics to perform the aspirations themselves. Consequently the service brought about major efficiencies and cost savings for patients and the health authorities. While all medical students are trained to do fine needle aspiration, Wright is also developing a course to teach the procedure to nursing sisters.

Moving closer to an appropriate CPD system

South Africa's new system of continuing professional development (CPD) for health professionals is based on professionalism and trust, using an audit system rather than obligatory submission of compliance, says the Deputy Dean: Education of the SU Faculty of Health Sciences, Prof Marietjie de Villiers. As chairperson of the CPD committee of the Health Professions Council of SA, De Villiers played a leading role in the development of a new CPD system for the country's health professionals, and has been invited to several international conferences to speak on the topic. In this article, she discusses the development of this new system by an inter-professional committee.



Prof Marietjie de Villiers

An appropriate system of professional development for health professionals to maintain professional competence by continuously updating and developing the knowledge, skills and ethical attitudes that underpin ethical practice, is an ideal pursued by countries worldwide, says Prof Marietjie de Villiers.

"Appropriate continuing medical education (CME) and continuing professional development (CPD) should be part of a system of accountability. It should also be effective in changing practice and it should be linked to quality and safety; be free of commercial bias and valid in content, i.e. evidence based."

De Villiers explains that CME as an approach to reach this goal, has been in existence in South Africa for a long time. An obligatory system that required medical practitioners to submit paper-based proof of CPD activities, was only introduced in 2000. However, this system was fraught with difficulties right from the start – including inadequate infrastructure, logistical difficulties and foci that were not educationally driven.

"Not surprisingly, practitioners experienced the system as punitive and as a point-chasing exercise, and it was ultimately discredited."

Thus, in 2005, an overarching CPD

committee was established by the then newly elected Health Professions Council of South Africa (HPCSA), with representation from all the Council's 12 Boards. This committee conducted extensive research and initiated a process of consultation to develop a new CPD system for the HPCSA. The new system was piloted with two Boards in 2006 and in January 2007 the system was implemented for all 12 Boards. De Villiers points out that three models of CPD are generally used.

"The first - and most commonly used model in South Africa - is the so-called Update model which merely facilitates the dissemination of knowledge and skills. The second, the Competence model, ensures that minimum standards for knowledge, skills and attitudes are attained, while the third, the Performance model, aims to help professionals to overcome barriers to successful change in practice, and also to resolve clinical concerns and improve health outcomes."

She says there was little evidence that the update model was effective in changing practice. "Evidence underlines the need to develop interventions that focus on the learning needs and practice problems of the individual learner. Effective CPD programmes include learning modalities and principles of adult education, i.e. self-directed learning, reflection, contextual

learning, direct relevance and more. It is therefore necessary to move CPD from an update model to a competence and ultimately performance model."

According to De Villiers the country's new CPD system promotes effective learning strategies within a hierarchy of activities. The learning strategies are not always related to time spent on learning. New innovations providing more options for rural practitioners include a learning portfolio and continuing small group learning in professional interest groups. Practitioners need to acquire thirty continuing educational units (CEUs) per year on a continuing basis over a period of two years, as opposed to the previous 50 points per year. "Thus, after a two-year cycle, practitioners should have a record of 60 CEU's at any given point in time."

The system is based on professionalism and trust, using an audit system rather than obligatory submission of compliance. Each practitioner maintains his/her CPD portfolio and submits it to Council only if drawn into a regular audit. The three-tiered hierarchy of learning activities has been organised to distinguish between the different types of learning, namely:

- Non-measurable, or once off activities;
- Measurable outcome, a continuing programme and assessment, and

- A formally structured learning programme.

De Villiers says the original idea was to force practitioners to obtain a part of their CEU's in each of the categories. However, it was eventually decided that all CEU's may be obtained on one level or across a number of levels, to simplify the system. Moving up the hierarchy is strongly promoted. She explains that the South African system was facing challenges similar to challenges experienced by CPD systems around the world, i.e. a punitive feel, difficult to measure outcomes and costly. Although the new system emphasises

quality as opposed to regulation, concerns around compliance continues.

Compliance

Compliance requires the practitioner to maintain an individual CPD activity record and checks on practitioners take place twice a year on a randomly selected sample from all registers, and audit reports are submitted to the different Boards.

The low uptake of only 25% during the pilot audit led to a decision to include all non-responders in the next audit. "Enabling legislation will enforce compliance as from 2009. The HPCSA has employed

communication strategies to inform and motivate practitioners. This included newsletters and extensive roadshows throughout the country."

When a practitioner does not comply, he or she is given a three-month period to provide the Board with an acceptable explanation, or a letter of motivation for a deferment for one year only. If the practitioner is still not compliant, he/she is registered in a category, 'under supervision' and may be subjected to a remedial programme of training, examination or any other action recommended by the Board.

Continued on page 15



CPD-accredited short courses for 2009

The StellMed Office in the SU FHS has again facilitated various CPD-accredited short courses for health professionals on a wide range of subjects. These courses will be presented in Cape Town and in towns and rural areas across the Western Cape in 2009. They represent a continuation of the Maintenance of Competence Project (MoComp) that was launched by the Provincial Department of Health in 2005 to improve the knowledge, skills and overall competence of rural health professionals.

The Following short courses will be presented up to May 2009:

5 February: **Difficult Airway**, FHS, Tygeberg from 08:00 - 17:00

12 & 13 February: **Emergency Medicine Update**, Vredenburg Hospital, from 08:00 - 17:00 on the 12th, and from 08:00 - 13:00 on the 13th

19 February: **Psychiatric Emergencies**, Worcester Hospital, from 18:00 - 21:00

24 February: **Cervical Cytology Workshop**, Paarl Hospital, from 09:00 - 14:00

26 February: **Adult and Paediatric Asthma**, FHS, Tygerberg, from 17:00 - 21:00

05 March: **Basic CPR and Basic ECG Interpretation**, George, from 11:00 - 17:00

06 March: **Small Surgical Procedure Workshop**, George, 09:00 - 12:00

11 March: **Neurosurgery Emergencies**, Malmesbury, from 18:00 - 21:00

19 March: **Completion of the Death Notification form/ BI-1663**, FHS, Tygerberg, from 18:00 - 21:00

26 March: **Paediatric and Neonatal Resuscitation**, Malmesbury, from 17:00 - 20:30

31 March: **Sexual Assault**, Stellenbosch, from 18:00 - 21:00

21 April: **Gynaecological Workshop**, Worcester Hospital, from 17:00 - 21:00

23 April: **Basic CPR and Basic ECG Interpretation**, False Bay Hospital, from 09:00 - 15:00

04 - 06 May: **GP Refresher Course**, FHS, Tygerberg, from 08:00 - 17:00

14 & 15 May: **Emergency Medicine Update**, George, from 8:00 - 17:00 on the 14th, and from 08:00 - 13:00 on the 15th

21 May: **Cervical Cytology Workshop**, Worcester Hospital, from 09:00 - 14:00

Please note dates and times may change. Visit the StellMed website for changes: www.stellmed.com

For further information, programmes and course registration forms, please contact Marjorie van Rooy at 021 938 9183.

MMed in Medical Genetics offered on shared platform

There are currently fewer than ten full-time qualified genetic specialists in the country.

In 2007, Medical Genetics received recognition as a fully registered primary speciality and is currently registered as such with the Health Professionals Council of South Africa (HPCSA).

Prof Denis Viljoen, who was appointed director of the SU Centre for Human Genetics Research and Education in 2008, has been active in the development of a common teaching platform for the universities of Stellenbosch and Cape Town, to accommodate the first registrars in this new speciality in 2009. He says the common teaching platform not only combines resources from the two universities, but it is also more in line with the service delivery strategies of the Provincial Government of the Western Cape. At the same time it will encourage joint projects between Provincial role players in the field.

“Stellenbosch and UCT have been given five registrar training posts – four from the National Health Laboratory Service (NHLS) and by the Provincial Administration. The two universities have various areas of expertise in Medical Genetics and will share teaching resources in presenting the new College of Medicine programme.

Viljoen hopes that the common teach-

ing platform will help to address the shortage of medical geneticists in South Africa. There are currently fewer than ten full-time qualified genetic specialists in the country. One of them is Prof Greetje de Jong of SU's Molecular Biology and Human Genetics division, who will play a leading role in the training of geneticists on the shared platform.

The new programme will be offered over four years, with inputs from basic scientists and medical geneticists with various strengths in human genetics, from the two participating universities. Viljoen developed a similar programme while he was head of the Department of Human Genetics of the National Health Laboratory Service and the University of Witwatersrand, where he trained eight specialists in Medical Genetics.

The new registrars, who will be appointed by January 2009, will be practicing as full-time medical trainees in genetics. Viljoen believes that they will enable the Western Cape stakeholders in health to offer better and more efficient services in the field of genetics. This will not only include a more extensive and thorough service, but also allow the development

of more cost-efficient laboratory tests within the participating universities and departments. At the same time the laboratories will be more appropriately employed and teaching capacity at all levels, i.e. undergraduate and postgraduate, will be increased.

As a further phase in the training process, Viljoen foresees the training of genetic counsellors to support the medical geneticists. Such counsellors will enrol in a two year Masters programme and assist the service delivery drive of the programme by counselling patients and educating the broader public. Viljoen also emphasises the importance of clinical research and the necessity of disseminating a knowledge of genetics throughout all the disciplines on the FHS teaching platform.

He points out that “60% of all multifactorial disease and even aspects of infectious disease are inherited, with the immunity of a patient playing an important role”.

For further information, please contact Prof Denis Viljoen:
eMail viljoend@iafrica.com

Short courses in Placental Pathology

Stellenbosch University will be presenting two short courses, Fetal and Placental Pathology for Africa.

- The first is a three-week accredited CPD short course, presented by the Division of Anatomical Pathology, for anatomical pathologists in the private and public health sector in South Africa and other African countries. A certificate of competence for nine credits will be awarded after assessment and a CPD certificate to the maximum of 30 CPD points will be issued, based on the attendance register. Students will be evaluated by means of a formal practical.

The aim of the course is to provide anatomical pathologists with the skills required to assess placentas, macroscopically and microscopically, to identify pathological changes that may have short term and long term sequelae for the infant. The role of the placenta in determining the cause of recurrent fetal loss, stillbirth and early neonatal death will be reviewed.

The course will also provide anatomical pathologists with training in autopsy technique in perinatal and neonatal death, as well as microscopy of fetal and infant organ pathology, with par-

ticular reference to hypoxic ischaemic brain damage, infections and pathology of preterm infants.

- The second is a one-week accredited CPD short course, also aimed at anatomical pathologists in the private and public health sector, in South Africa and African countries. A certificate of competence for three credits will be awarded after assessment and a CPD certificate to the maximum of 30 points will be issued, based on the attendance register.

This course pursues the same aims as the three-week course, but training in autopsy techniques in perinatal and neonatal death is excluded.

The programme coordinators are Profs Colleen Wright and ROC Kaschula.

For further information, please contact Jenni Munday:
eMail jenni@sun.ac.za or telephone +27 21 938 9532.

A degree in Clinical Epidemiology

The SU Faculty of Health Sciences offers a new Masters degree in Epidemiology (MMedSci in Clinical Epidemiology).

Clinical Epidemiology impacts on patient care by providing scientifically valid answers to questions concerning diagnosis, prevention, therapy, prognosis and aetiology. This Masters Programme, with an emphasis on evidence-based medicine, provides health professionals with the necessary skills to generate and apply reliable, up-to-date evidence in clinical practice.

Outline: The 10-module programme, which includes a research project, offers robust methodological training for health care professionals who wish to pursue a career in Clinical Research or Evidence-Based Practice. The programme will be of interest to those seeking a sound understanding of advanced scientific concepts and rigorous training in the use of epidemiological methods in health care.

Eligibility: For admission to this MSc Programme the prospective candidate shall hold an MBChB or equivalent degree; or at least a 4-year professional Bachelor's degree in a health-related discipline.

For further information, please contact Carine Smalberger:
eMail: carine@sun.ac.za Tel (021) 938 9098
- Fax (021) 938 9558

CPD system

Continued from page 13

However, De Villiers points out that dedicated time for learning becomes a luxury in the South African health system which is challenged by difficult working conditions, lack of staff and health professionals overwhelmed with patient care duties.

"The iMoCOMP project in the Western Cape is an example of a partnership between health service providers and educational institutions creating a positive learning environment linked to health service needs."

She emphasises that the new system provides opportunities for practitioners

MMed in Paediatric Surgery

Until 2007 Paediatric Surgery was a subspeciality of General Surgery. Stellenbosch University has been an accredited training centre with the HPCSA for Paediatric Surgery since 1985.

However, in August 2007 the *Government Gazette* announced that Paediatric Surgery has been established as a full speciality in its own right.

"This means that the surgical care of children will increasingly be done by those qualified to do so," says Prof Sam Moore, a paediatric surgeon at Tygerberg Hospital and the SU FHS. "This change has also necessitated the adjustment of the training schedule to accommodate the new regulations and training schedules. Due to the current critical shortage of paediatric surgeons in South Africa, training in Paediatric Surgery has become an absolute priority."

South Africa has a large paediatric population and according to Moore, it has been estimated that up to 80% of children will receive a surgical procedure of some sort by the age of 15 years.

He says the scope of paediatric surgical care has maintained and improved the quality of care for children with surgical disorders wherever they have been established and are the international norm. "With the growing sophistication in neonatal care, anaesthesia and the investigative ability in Paediatrics in general, the need for dedicated specialists is rapidly growing. In a fairly recent survey, 60% of South African general surgeons indicated that they were not adequately trained to oper-

ate on children and would benefit from further training. Accepted international norms require one paediatric surgeon per 500 000 of the population. SU is an accredited Paediatric and Paediatric Surgical training centre, actively engaged in goal directed research. A paediatric surgical service was established at the inception of the SU Faculty of Health Sciences, initially at Karl Bremer Hospital and later at Tygerberg Hospital while accreditation for training was established in 1985.

The commencement of the new MMed programme at the SU is designed as a four-year Masters programme to allow specialization in Paediatric Surgery as a speciality in its own right without necessarily completing a full training in General Surgery first. This is in keeping with the new HPCSA regulations.

The programme is designed to encompass both the Primary and Intermediate courses necessary for specialization within the first two years, as well as preparing candidates for the final specialist examination in Paediatric Surgery. It has also been designed to accommodate those who are qualified General Surgeons who may apply for some accreditation of training time, depending on the eligibility of such training time.

"As such, the MMed programme has already been attracting considerable interest and will fulfil its duty to help train the next generation of Paediatric surgeons in South Africa," Moore says. For further information, please contact Prof Sam Moore: eMail: swm@sun.ac.za

to develop learning activities that support adult education principles. "Work needs to be done to determine whether this will move our system from largely an update model to a competence model, and finally a performance model."

At the same time, "the inter-professional nature of the CPD committee has provided a wonderful opportunity for advancement in the field of inter-professional continuing education. Cross

accreditation of learning activities for all Boards enhances the concept of inter-professional learning and its benefits for the health care system. Developing policy in an inter-professional committee has had its challenges, such as accommodating the diverse nature and needs of the various professions. It resulted, however, in ownership and support of the guidelines by all the professions in the HPCSA."



“If we admit a student, we must accept the responsibility of supporting that student for the duration of his or her studies to ensure that he or she completes the course successfully.”

Student support *that makes a difference*

Over the past decade, Stellenbosch University’s Faculty of Health Sciences has been particularly successful in addressing one of the most worrying problems facing the country’s medical schools, namely to ensure that students from academically disadvantaged backgrounds see their studies through once they have been admitted.

In recent years, the Faculty has managed to cut its drop-out rates to the extent that it now has a retention rate of more than 90%, as well as pass rates and throughput rates of 90% and more – the highest of all Stellenbosch University faculties and the highest of all health sciences faculties in the country.

Retention and pass rates came under close scrutiny about ten years ago when

the prospect of two years of community service for medical students was first raised, says Prof Ben Page, who in 1998, designed and initiated a tutor-mentor programme that was fine-tuned to identify first and second-year students who are at risk academically. “At the time, it was generally accepted that 13 to 18 percent of second year students would fail,” he says.

“If we admit a student, we must accept the responsibility of supporting that student for the duration of his or her studies to ensure that he or she completes the course successfully.”

“For us, as a Faculty, this was no longer acceptable. We decided that if we admit a student, we must also accept the responsibility of supporting that student for the duration of his or her studies

to ensure that he or she completes the course successfully. Today this is the fundamental point of departure with regard to the selection and admission of all our students.”

The development of the Faculty’s wide-ranging support for its students coincided with the restructuring of health science education at the country’s eight medical schools in the 1990’s when the historically white medical schools started to increase their first-year intake of black students to address racial imbalances in student demographics. As at the other institutions, Stellenbosch University’s Faculty of Health Sciences changed its selection criteria to facilitate access for talented students who may be academically disadvantaged as a result of suboptimal schooling.

“However, we did not want to play a

numbers game in terms of our admission of black students; we wanted to ensure that each and everyone of the students admitted to the Faculty's various health sciences programmes, would be retained for the duration of the course and leave the Faculty fully qualified," says Prof Marietjie de Villiers, the Faculty's Deputy Dean: Education.

Students are closely monitored

To achieve this goal, the SU Faculty of Health Sciences has developed a comprehensive range of support programmes that roughly resemble those offered at some universities, but are fine-tuned to the extent that they now form a finely woven academic and psychosocial safety net. The programmes form part of a multi-layered approach, developed in accordance with the needs of students and involves extremely close monitoring of student progress through the various years of study.

"It is vitally important that student support starts at the moment students enroll at the Faculty and that it continues right through to their final year. Some of our students are completely overwhelmed when they arrive on campus. They are faced with a whole new environment and a work load and study programme so rigorous that they can not afford to fall behind – not even for a week – because they won't be able to catch up again. It is therefore essential to identify students with adjustment problems or academic crises immediately and refer them to the clinical psychologist on campus, or to our student health service," says Page.

Academic support in the curricula

Today academic support mechanisms are built into all the Faculty's curricula for health sciences students. The first six months of the first year curriculum is specifically aimed at optimising personal and professional development that includes, among others, aspects such as stress- and time management, science writing skills, data management, evidence-based practice and epidemiology as well as language development which is provided for by a

specific module. This means that students who have no language proficiency, or only a limited proficiency in Afrikaans and Xhosa, are exposed to a structured module. The training is mandatory and successful completion of the module is required for progression in the course. This six months period, known as the 'foundation phase' of the curriculum, it is fully shared by MBChB and BSc Physiotherapy students while Occupational Therapy and Dietetics students also take part in some of the modules.

"We did not want to play the numbers game in terms of the admission of black students. We want to ensure that each and everyone of the students admitted to the Faculty, would be retained for the duration of his or her course and leave the Faculty fully qualified."

At the same time, Stellenbosch University's extended degree programmes permit selected students who have been disadvantaged as a result of suboptimal schooling, to complete the standard six-year MBChB programme over an extended period of one additional year. The objective is to put a degree within reach of such students. The programme adds support and development modules to the training of students who follow this route, and it has been so successful that these students seldom fail or drop out - so much so that they maintain an academic success rate of more than 90 percent.

The Faculty's third line of support is a highly regarded tutor-mentor programme which is more strongly focused on peer tutoring

– as opposed to peer mentoring - than most programmes of this nature. This student-driven programme is compulsory for all first- and second year students and it comprises small groups of seven to eight students who are assigned to a tutor when they start their studies. The tutors are senior students who are comprehensively trained to help students from academically disadvantaged backgrounds as well as academically strong students to become academically self-sufficient and independent and to reach their full potential. Part of their task is to help the students to develop the attitudes and interpersonal skills that are necessary for a career in the health sciences, and to recognize academic and psychosocial problems as soon as they emerge. The tutor-mentors provide academic staff with written feedback reports on a monthly basis and they can refer the students in their care for psychological or academic support, among others to a full-time psychologist on campus.

Support in clinical years

While these programmes focus on students in their early years of study, the Faculty has also identified a need for support for students during their clinical years when there are few mechanisms to monitor the progress of individuals. In the recent past, there has been cases where a student's performance was compromised as a result of adverse social circumstances and poverty – so much so that the health of some students was affected because they did not have enough money for food. The Faculty has therefore appointed a clinical progress facilitator for its MBChB programmes to intercept and address problems of this nature.

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Physiotherapy students

At the same time, the resident wardens of the student hostels on campus are also trained to closely interact with students, recognize and deal with financial problems and emotional speed wobbles, and to refer the students for further support when necessary. Thus various informal arrangements have been put in place to help students immediately. For instance, academic staff and hostels have access to funds to provide students in need with cash payments for their immediate needs while in the longterm, they help the students to enroll in a student work programme that pays small monthly salaries. Academic staff also help students to access bursaries and scholarships specifically aimed at disadvantaged students.

Today there is very little difference in the pass rate of students who were selected on the basis of their matric achievements and those who entered the University from a background of suboptimal schooling. One of the best examples of the success of this approach, is Dr Pearl Fredericks who enrolled from such an academically disadvantaged background. In 2008 she made Faculty history when she became the first student ever to graduate with distinctions in nine of the eleven clinical disciplines in her final year.

How the Faculty *promotes diversity*

The SU Faculty of Health Sciences' commitment to address the historical disparities and inequalities in the country's tertiary education system, and to bring the demographic profile of our students into alignment with the country's population profile, manifests in a range of strategies, developed over the last decade. These include:

GESOG!

Finding the best and the brightest

GESOG! (an Afrikaans acronym for Gesondheidswetenskappe Geleentheidsontwikkelingsprogram) programme is an exciting and interactive introduction

to the different fields of study in health sciences, with the specific aim of improving diversity.

The programme serves to identify previously disadvantaged learners with respect to their ability to successfully complete a course in health sciences. GESOG! was designed to empower the learners with knowledge that may assist them in making informed decisions regarding their future career paths as health professionals.

The programme takes place every year in the first week in July and about 100 learners from previously disadvantaged communities over the whole country are selected from 400 to 500 applications, and invited to visit the FHS for a week. They spend the week on Campus, in student accommodation, and they are exposed to the various careers offered at Tygerberg campus. The exposure includes the opportunity to meet and see health professionals in action, do career visits and attend information sessions where learners are informed about the respective requirements for each discipline, academic support offered on the campus, as well as guidance towards the relevant job market.

In addition the learners attend a series of lectures, perform and present a group mini-research project in the field of health sciences, and take part in a debate on health issues.

Many of the learners attending the programme are top achievers and a number of those who have been recruited through the programme have already completed their studies successfully while others are currently enrolled at the Faculty, and doing very well.

Campus visits for African students

Changing perceptions

This programme was introduced in 2003 when African students who were provisionally selected for the health sciences programmes, were first invited to visit the Tygerberg Campus to learn more about the Faculty.

The primary goal of this initiative is to

convince these prospective students to accept the positions that they have been offered prior to the introduction of the programme in 2003, as acceptance rates were less than 40%. In 2005, 28 students were invited; 25 visited the campus and 19 accepted places as students. In 2006, 37 students were invited of which 33 visited and 24 registered (a total of 72%!).

In 2007 the number of black African students who were selected far exceeded the expectations and can be accredited to intense recruitment efforts. Fifty students were invited, of which 37 made use of the opportunity to visit the Campus. Towards the end of the year, 20 of the 37 students who visited have sent in acceptance forms and paid deposit fees.

From the feedback alone, many students acknowledged that their perception of the institution has changed as a result of the Campus visit.

Community service therapists

Utilising the services of our alumni

The Faculty's former school for Allied Health Sciences developed an innovative strategy to use graduate community service therapists as advocates for the allied health sciences in the areas where they complete their community service.

Undergraduate Dietetic students also engage in professional advocacy as part of service learning during their undergraduate programme.

Eight different secondary schools are approached per year. Students then approach only the classes that teach subjects required for entry into the Dietetics programme and the learners in these classes are then provided with information on the profession and the FHS.

In 2007, the Occupational Therapy lecturer who serves on the Faculty's Diversity group, Mrs Arifa Sheik-Ismail, formulated a letter that will go to all of SU's newly qualified occupational therapists (Stellenbosch), asking them to target at least two schools in the community where they have been placed for their community service, to promote the occupation.



Prof Gerhard Walzl, of the Division of Molecular Biology and Human Genetics, teaches a combined MBChB and Physiotherapy first year class

SCIMATHUS

Benefiting from a SU programme

This is a post-matric programme of the university for students with potential, but who do not meet the required matriculation results to gain access to tertiary studies. This programme is open to students doing Mathematics and Physical Science or Accounting. When accepted into SciMathUS, the students rewrite the National Certificate Examination in the two subjects. To develop their general academic skills, they also do Language and Thinking Skills, Computer Literacy, Engineering Drawing or Statistics and an introduction to Financial Accountancy. A number of these participants have enrolled at the FHS.

<http://academic.sun.ac.za/iwwous/Scimathus.html>

Tutor/Mentor Programme

Coping with the academic programme

As discussed in the above section on student support, the Faculty has been running a successful tutor/mentor programme for a number of years. Peer tutoring plays an important role in

the lives of especially first and second year students. While the tutor/mentor programme is not specifically targeted at the diversity candidates it has proven to be a very useful support programme for the Faculty's diversity students.

The tutor/mentor programme at FHS remains a leader in the domain of student peer support programmes and has drawn favourable attention locally, nationally and internationally.

The students themselves have testified that the programme played a major role in their ability to cope with the rigours of the academic programme at FHS.

Language Support

Promoting language proficiency

Before 2008, students in need of language support received focused and special lectures from the University's Language Centre. Currently, a new module presented during the first-year foundation phase of the revised curriculum, makes provision for language development. Students, who have no language proficiency, or only a limited proficiency in both Afrikaans and Xhosa, are exposed to this structured part of the curriculum.

Learning techniques focus on activities

and engagement that stimulate fast learning in a relaxed and effective manner. It is also focused on successful communication and not primarily on a grammatically correct language use.

The training is credit-bearing and mandatory, thus successful completion of this learning area is required.

Extended Degree Programmes

Disadvantaged by schooling

Students enrolled in MBChB and BSc Physio programmes and who have been disadvantaged by sub-optimal schooling may be selected by the Faculty to join its Extended Degree Programme.

The objective is to put a degree within reach of such students. To this end, the programme offers them assistance in developing their potential. Twenty students who had not been admitted to the standard programmes in 2006, were admitted to EDP, while 24 students were admitted in 2007.

Bursaries and loans

For the disadvantaged

A number of bursaries and scholarships aimed at disadvantaged students, have been made available to the Faculty.

Breaking the **CYCLE OF DAMAGE**

With the shadow of HIV/Aids and the Tuberculosis co-epidemic looming large over the health and well-being of South Africans, other endemic diseases also continue to erode our society, causing untold misery and harm in communities all over the country. For the past two years, researchers in the SU Faculty of Health Sciences, in cooperation with renowned international scientists and universities, have directed their attention to one of the most insidious of these conditions, namely fetal alcohol syndrome and the other damaging effects of prenatal alcohol consumption on unborn babies – especially in the large parts of the Western Cape.



One of the foremost South African experts in the field of high risk pregnancy and perinatal mortality, Prof Hein Odendaal of the Department of Obstetrics and Gynaecology, has devoted much of his career to research aimed at curbing the high incidence of maternal and perinatal deaths in our country.

The research conducted by Odendaal and his team was initially focused on conditions such as placental bleeding, preterm labour and hypertension. However, since his retirement as head of the Department of Obstetrics and Gynaecology at the end of 2003, he has broadened the scope of his investigations in this field to study the effects of a range of socio-economic ills that lead to preterm labour and perinatal deaths – such as the damaging cycle of disease, malnutrition, alcohol abuse and excessive smoking that many

women are caught in. He has thus played a leading role in establishing a strong and well-funded research focus area in the FHS to study the detrimental effects of prenatal alcohol consumption.

Two wide-ranging studies in this field were launched over the past two years, namely the international PASS study, headed in South Africa by Odendaal, and an international Fetal Alcohol Syndrome prevention study, conducted in two Western Cape Communities by renowned international researchers in cooperation with the SU Department of Psychiatry. Researchers from various departments and disciplines in the Faculty are taking part in the two projects, both of which are funded by the NIH. The combined funding allocated to the two projects will amount to a total of more than R50 million over the next five years.

The study focuses on the effects of a range of socio-economic ills that lead to preterm labour and perinatal deaths such as the damaging cycle of disease, malnutrition, alcohol abuse and excessive smoking.

The **PASS** study

Searching for causes of perinatal mortality

The Prenatal Alcohol in Sudden Death and Stillbirth (PASS) study is jointly funded by two of the US National Institutes of Health, namely the National Institute on Alcohol Abuse and Alcoholism and the National Institute of Child Health and Human Development.

PASS comprises a unique, multi-disciplinary and international research network that involves close collaboration between Stellenbosch University in South Africa, Harvard and Columbia universities in the United States, as well as the American universities of South and North Dakota. In the FHS, departments and divisions that work closely with Prof Hein Odendaal and his team include Forensic Medicine, Anatomical Pathology, Psychiatry and the Human Genetics and the Ultrasound units. The network as a whole received funding of \$20 million dollars, of which the Stellenbosch team will receive R30-R33 million over the next five years. During this period the study aims to enroll some 12 000 patients – 7 000 of which will be recruited in the Western Cape and the rest in the Dakotas.

The first phase of this huge and technologically-complicated project was concluded towards the end of 2007 and the project entered its second phase in 2008. Because the project must meet certain bureaucratic protocols, its viability had to be established during the first phase of the study, says Odendaal, the principal investigator and South African coordinator of the study.

“For instance, in cases of Sudden Infant Death (SIDS), we had to get approval to take biopsies of the central nervous system and to send these on dry ice to Boston. The same applies to stillbirths. We also had to meet other requirements, such as demonstrating that we can monitor the fetal heart and perform other procedures. We have passed these hurdles in the first

phase and it was found that the system was viable and working well.”

Odendaal has subsequently built a team comprising a project manager, eight nurses, two drivers for the team’s two cars, two data capturers and a social worker who deals with social problems encountered by the team. She also offers support and counselling to patients.

Pregnant women are recruited at the Bishop Lavis prenatal clinic and will be followed intensely during their pregnancy. Their infants will also be followed-up carefully until the age of three years. Exposure to alcohol and nicotine will be documented and ultrasound scans of the heart rate will be done during pregnancy to study fetal development. This will be correlated with neonatal outcomes.

According to Odendaal, information from the study may lead to a better

understanding of how and why alcohol affects the fetus adversely during critical phases of development; how it affects maternal health during pregnancy and how it adversely influences the neuro-developmental outcome of the infant. “We want to test the hypothesis that alcohol exposure during pregnancy increases the risk of SIDS; leads to unexplained intra-uterine death and that these effects are aggravated by nicotine.”

One of the co-workers in the study is Dr Hannah Kinney of the Boston Children’s Hospital, who is an expert in the field of sudden infant deaths – the biggest cause of death during the first year of life in the United States and Britain. She will study the pathology of the brain and the brain stem in the pathology lab, as well as frozen cuts of the placenta and the genetics of the blood and sputum.

Odendaal says the knowledge emanating from this study may help public health programmes implement preventative strategies for SIDS, stillbirth and alcohol-related disorders. In addition, valuable information will be obtained on the two most common causes of perinatal mortality at Tygerberg, namely *abruptio placenta* and preterm labour.



Prof Hein Odendaal, (left) with members of the PASS study team. They are data capturers Ms Suzelle Kruger (sitting at the back) and Ms Lucy Brink (in front). Standing at the back are clinical coordinators, Ms Milly de Jager and Ms Sylvia Abrahams (in front).

FAS prevention study



In 2008, the increased research emphasis on the effects of prenatal alcohol consumption was also demonstrated when a large preventive study on fetal alcohol syndrome (FAS) was launched at the research site in the Wellington area.

In the Western Cape, Fetal Alcohol Syndrome represents a health crisis with overwhelming socio-economic implications. Caused by maternal alcohol use during pregnancy, FAS is one of the leading causes of preventable mental and physical retardation among infants worldwide. However, the highest FAS rates in the world have been identified in wine-producing areas of the Western Cape where 40.5 to 46.6 per 1 000 children are affected. Research has also shown the prevalence of FAS among Grade 1 learners was 46 per 1000 in 1997 and 75 per 1 000 in 1999. Similar research conducted in Gauteng and De Aar in 2001, and Upington in 2003 found FAS prevalence rates of 19, 103 and an estimated 75 per 1 000 respectively. The Western Cape rates are more than a hundred times higher than those in the United States and other parts of the world.

Groundbreaking research

The groundbreaking research in this field was conducted over the past decade by Prof Philip May and Dr Phillip Gossage of the University of New Mexico in the United States, in cooperation with South African scientists. Through their contact with Stellenbosch University's Prof Hein Odendaal, the American scientists have formed a partnership with the SU Faculty of Health Sciences to launch a five-year FAS prevention study in a high risk community in the Western Cape.

During the study, May and Odendaal's teams will cooperate closely and share the same screening protocols.

The NIH-funded prevention study follows a population-based study by May in the same Western Cape communities where he and his team studied the maternal risk factors for FAS. Two of the most significant findings of that study indicated that mothers of lower socio-economic status were at higher risk of having children with FAS, and that the study community as a whole had a very limited knowledge or understanding of the disease and the dangers of alcohol consumption during pregnancy. The study concluded that preventive interventions were needed to address the maternal risk factors in these communities.

Prevention techniques

During the year, May and his colleagues visited the FHS to launch the prevention project, which will be conducted by a joint team of researchers from the United States and the SU Faculty of Health Sciences, the University of Cape Town and the Medical Research Council. The study is based on the Institute of Medicine model that incorporates universal, selective and indicated prevention activities. It includes two Western Cape communities with a high incidence of FAS. The prevention component of the study is conducted in one community and involves various primary, secondary and tertiary prevention techniques to discourage women from drinking during pregnancy. Research in the second community is confined to a screening programme for women to identify high-risk drinkers, providing general information to all

Bringing the spotlight to bear on a health crisis with overwhelming socio-economic implications.

women attending antenatal clinics, and referral to health and social services. The two sets of communities will be compared on a variety of outcome measures. The research team - comprising eleven prevention staff, of which five are from Stellenbosch University - is led by Prof Philip May as principal investigator, and Profs Soraya Seedat and Charles Parry of the SU Department of Psychiatry. Ms Anna-Susan Marais is the research and data programme manager. The five-year study is funded by the NIH's National Institute of Alcoholism and Alcohol Abuse. The Faculty's budget for the first year of the project amounts to three and a half million rand while the total budget for five years will amount to approximately R18 million.

May has pioneered various prevention studies in American Indian communities among women who are binge drinkers like the women in high-risk communities in the Western Cape. Based on their success in these communities, May and his team will implement a series of preventive interventions, including broad-based and targeted education, active case management, nutritional supplementation

for pregnant mothers, and/or birth control to prevent pregnancy when drinking before pregnancy occurs. "We have found that there is interaction between poor nutrition, low body size and binge drinking," May says.

"The prevention approach that we are using have been most successful at reducing the number of binges among the American Indian population - from 18 times over six months to only twice in the following six months. In the Plains, 80% of pregnant women in case management had normal births, without complications. Only nine out of 149 babies born, had FAS

and with two exceptions, all the children were normal."

Using the same techniques of research and prevention developed in the American Indian communities, the South African study will determine whether comprehensive, community-wide prevention of FAS is effective in local communities and which of the techniques are the most viable. The team - all of whom have been trained in the management of high risk communities - will also measure the knowledge, attitudes, convictions and alcohol use of the adult population and the community's readiness for change.



Members of the study team are, from the left: Prof Soraya Seedat, Ms Anna-Susan Marais, Dr Cudore Snell, Prof Philip May and Dr Phillip Gossage.

A researcher returns to his roots

After living and working in the United States for 30 years, Dr Cudore Snell, prevention specialist of the FAS prevention study, has not lost his ability to speak fluent Afrikaans.

When one meets Dr Cudore Snell, data manager and statistician of the FASS prevention study, you automatically accept that he is part of the South African contingent of the research team - simply because he speaks Afrikaans with the same dialectical ease as the rest of the Stellenbosch group.

It is therefore quite a surprise to learn that Snell is, in fact, American. Although born and bred in the Boland, he has left South Africa more than 30 years ago to study at the University of North Carolina in the United States - and never came back.

On completion of his doctorate at Howard University in Washington DC, he joined the staff of Howard University's Department of Social Work - and he has been there ever since. Although he has



Dr Cudore Snell

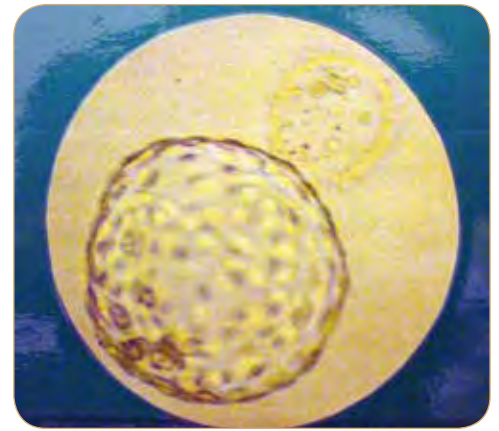
only occasional contact with fellow South Africans - mostly at the South African embassy in Washington - Snell never lost the ability to speak, what he calls, fluent 'social' Afrikaans; an Afrikaans surprisingly undefiled by modern day jargon and other impurities.

Snell has worked as data manager and statistician with Prof May for 17 years and his Afrikaans language skills are extremely useful when the team works in communities where most of the people are Afrikaans-speaking - especially since the study relies heavily on communication and techniques such as motivational interviewing.

He says he is looking forward to working in the community he has left so long ago, and renewing ties with family and friends he has not seen for 30 years.

Fertility on ice

In the world of assisted reproduction, cryopreservation of ova started out as a way to preserve the fertility of women who undergo fertility-threatening cancer treatments or surgery, but the technology is also proving to be a solution for those who want to delay motherhood to pursue career goals or until the arrival of 'Mr Right'. Prof Thinus Kruger and scientists from the SU's Human Reproductive Unit, recently established an ovum bank where the female fertility is literally preserved on ice.



Whether a woman is facing infertility from chemotherapy or radiotherapy or wanting to delay motherhood, the SU's Human Reproductive Unit now offers her the opportunity to freeze her eggs (ova) until it is safe to conceive or until she is ready for pregnancy and motherhood.

This Unit which has been leading the way in infertility and assisted reproduction in South Africa and Africa since the early 1980's, has now established one of the country's first cryopreservation banks for ova – allowing women to literally put their fertility on ice and delay conception for many years.

Prof Thinus Kruger, head of the SU Department of Obstetrics and Gynaecology and a leading expert in the field of infertility and human reproduction, points out that a successful pregnancy and childbirth is not determined by the age of a woman's uterus, but by the quality of her ova. "Egg quality is at its best when a woman is in her twenties or early thirties, but deteriorates from the late thirties onwards. However, the uterus does not age and a woman who preserves her eggs when she is in her twenties or early thirties, can still have a successful pregnancy when she is older – provided that she maintains a healthy lifestyle."

Kruger, explains that the Stellenbosch Unit has been freezing fertilized eggs (embryos) successfully since the 1980's when the first conception and birth from a frozen embryo was achieved at Tygerberg Hospital in 1988. In contrast to the highly

successful cryopreservation of these embryos that are usually left over from in vitro procedures, medical scientists struggled for years to freeze and thaw unfertilized ova successfully - mainly because the ovum has a more solid structure than the embryo and contains less water. Consequently the eggs tended to disintegrate in the freezing process as a result of inadequate dehydration.

However, these problems were solved in recent years when researchers in Italy and Germany developed effective new cryopreservation techniques. Over the past five to seven years, these techniques

were perfected to the point where the freezing of ova is now as successful as the freezing of embryos and male sperm. In 2007, top scientists from Germany visited the Faculty to train members of Kruger's team in the finer details of egg freezing, enabling them to establish a cryopreservation bank at the SU research facility at the Vincent Pallotti Hospital. The scientists involved in these initiatives are Drs Marie-Lena Windt-de Beer, Christiaan Hoogendijk and Mr Greg Tinney.

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Drs Christiaan Hoogendijk, Marie-Lena Windt-de Beer and Prof Thinus Kruger

Frozen ovarian tissue provides *natural hormone therapy*

Research in the SU Faculty of Health Sciences indicates that women who get cancer treatments that leave them infertile, can have their hormone production and even fertility restored through the re-implantation of cryopreserved ovarian tissue.

Ovarian cryopreservation for cancer patients represents another recent and most important advance in fertility treatment at Stellenbosch University and Tygerberg Hospital.

This technology comprises the freezing and re-implantation of tiny strips of tissue cut from the ovaries of a patient set to undergo cancer treatments like chemotherapy or irradiation. Although the technology is relatively new, the first pregnancies to follow the use of the procedure, have already been recorded in Belgium and Israel.

In South Africa, Dr Hennie Botha, a gynaecologist in the FHS Unit for Gynaecological Oncology, is playing a leading role in the development, research and fine-tuning of this state-of-the-art technology which is aimed at preserving fertility on the one hand, but also at preventing the termination of hormone production and consequent menopause when the ovaries are damaged by chemotherapy and radiation.

Explaining the technology in a nutshell, Botha says an ovary is removed from a female patient, set to undergo cancer treatment. The shell of the ovary is removed and tiny slivers are cut from this shell and frozen in liquid nitrogen. Should the cancer treatment destroy the remaining ovary, the frozen slivers can be re-implanted after the treatment to ensure continued hormone production and prevent the woman from experiencing immediate menopause.

The technology is particularly important for young girls whose fertility and hormone production are threatened when they undergo treatments for childhood cancers like lymphoma or leukemia. These girls may never enter puberty. "The importance of research in this field is underscored when one considers that one

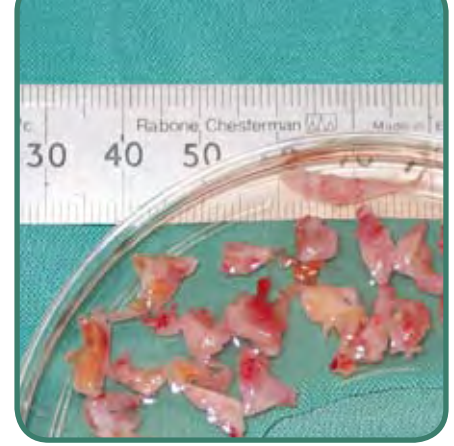
in every 400 adults has survived cancer as a child or young adult."

It is furthermore of particular importance in South Africa where cervical cancer is one of the most common cancers in women. In some cases, treatment involves irradiation of the whole pelvic area which inevitably leads to ovarian failure.

Botha's research includes a number of Tygerberg patients who required chemotherapy and radiation treatment for advanced cervical cancer. In these cases, both the ovaries were removed since there was no chance that they would have normal function after the treatment. Botha says the ovaries are removed laparoscopically and the core is removed and tested for signs of cancer. If it turns out that the ovaries are also cancerous, tissue from the affected ovaries cannot be re-implanted into the patient.

"If the ovaries are cancer-free, the shell is cut into slivers of 2mm x 2mm and these strips are frozen in liquid nitrogen at -196 degrees Celsius until the patient needs it. On completion of the cancer treatment, 10 to 20 pieces of preserved ovary are thawed and implanted into the patient's upper inner-arm," Botha says.

This particular treatment is not aimed at restoring fertility, but mainly at maintaining hormone production, the prevention of menopause and the loss of oes-



trogen which protects women against premature ageing and conditions such as osteoporosis. Although this can be done with synthetic hormone therapy, Botha and his team believes that ovarian implantation represents a more natural treatment that eliminates the necessity of affected women taking medication for the rest of their lives.

The success of the procedure has been illustrated by the early results of Botha's research when patients who were treated as part of the study, started to produce hormones after the implantation of the ovarian tissue. However, the researchers are still trying to determine exactly how many slivers of tissue should be implanted, how long the hormone production will last and what the best method of cryopreservation is.

A long-term aim of Botha's research is to eventually implant the preserved tissue back into the same position from which it was taken, specifically to restore fertility and enable a woman to fall pregnant. In such cases, the doctor will remove the outer shell of the ovary which contains the immature eggs. This shell is divided into strips and the strips are frozen. When they are re-implanted into the woman, the strips recruit their own blood supply and start producing mature eggs.

This requires cutting edge technology and the technique is still in the early stages of development. However, for doctors and medical researchers like Botha, the first births resulting from frozen tissue re-implantation serve as proof that it is indeed possible to restore fertility.

Left: The ovarian tissue is frozen in liquid nitrogen at a temperature of -196 degrees Celsius.

Frozen egg technology - what it involves

When a woman decides on freezing her unfertilized eggs, and is approved as a candidate for the procedure, she is treated with fertility drugs to produce at least four eggs or more, Kruger says. The eggs are harvested by using a long needle in a transvaginal procedure that takes about 10 minutes. The mature eggs are frozen in the laboratory, in a step-by-step procedure and stored in liquid nitrogen at 196 degrees Celsius. Theoretically, the eggs can be stored indefinitely.

When the woman decides to re-use the eggs, they are taken out of storage and thawed. Since the thawed eggs don't fertilise naturally, an intracytoplasmic sperm injection (ICSI) procedure is performed. As in other in vitro fertilization procedures, the eggs are transferred to the uterus in a simple, non-surgical procedure, a few days after fertilization. The chances of a pregnancy resulting from the frozen egg procedure is currently about 30 to 40%, according to world literature.

The ovum bank

Apart from women who freeze their ova to preserve or prolong fertility, ova from donors are also preserved in the Unit's ovum bank and used as part of the Unit's comprehensive infertility treatment programme.

Kruger says donor eggs from a healthy young donor often offer the best chance for conception and birth for women who cannot conceive as a result of cancer treatments and other problems such as diminished ovarian reserves or early menopause. "Many of these women have not had the opportunity to preserve their own eggs and we provide them with the opportunity to 'adopt' an egg from the ovum bank and use it within the prescriptions of the law.

"Someone donating a heart or a kidney is usually hailed a hero, but such a person is not alive to know that he or she is a hero. If you donate a gamete, you are alive and you know that you have helped someone else," Kruger says. "To do that is to donate your heart."

The SU ovum bank motivates healthy young women to donate eggs. They also advertise and screen potential donors on the basis of their family history, health and disease profile and lifestyle habits. Donors also undergo psychiatric evaluation.

"In terms of the law, the women can not be paid for their eggs, but they receive reasonable compensation for their time, travel and stay in hospital.

When women are treated with donor eggs, the team prefer to use fresh eggs. However, eggs left over from the procedure are now frozen and preserved in the ovum bank.

Women who benefit from frozen egg technology

- Originally, frozen egg technology was pioneered as a technique for women about to undergo fertility-threatening cancer therapy or surgery. "Thus women who undergo chemotherapy or radiotherapy in the pelvic area, or certain surgical procedures, now have the opportunity to freeze their eggs until they have recovered and are well enough to conceive."

- For a woman who does not have fertility problems but would like to delay childbearing because she has not met the right man, or would like to pursue career goals, frozen egg technology offers the opportunity to prolong her fertility while she postpones childbearing. Since a healthy woman can carry a baby in her womb long after menopause, the technology now gives her a much wider reproductive window, allowing her to combine a career and motherhood.

- Women who have not had the opportunity to preserve their eggs, and are unable to conceive because their fertility was compromised by medical problems, can obtain frozen donor eggs from the ovum bank in much the same way as sterile men obtain semen from a sperm bank.



Left: Dr Hennie Botha, who is conducting studies on frozen ovarion tissue. Above: Mr Greg Tinney, one of the scientists involved in cryopreservation initiatives in the lab.



Prof Marietjie Herselman

Menslike Voeding

Unieke diens vir dieetkundiges bekend gestel

'n Unieke diens wat dit vir dieetkundiges moontlik maak om 'n dieet vir nierlyers vinnig en doeltreffend saam te stel, is onlangs deur die Afdeling Menslike Voeding in die US Fakulteit Gesondheidswetenskappe bekend gestel.

Hoewel enigeen gratis toegang het tot inligting op die tuisbladsy van hierdie diens, is die *RenalSmart Nutritional Information System* in die eerste plek 'n webwerf wat aan geregistreerde dieetkundiges toegang gee tot 'n rekenaarprogram wat vinnig en doeltreffend 'n dieet uitwerk wat beantwoord aan die spesiale behoeftes van individuele nierpatiënte. Ander persone, soos gesondheidspersoneel en pasiënte self het ook beperkte toegang tot die program.

"RenalSmart bestaan uit twee komponente," verduidelik prof Marietjie Herselman, waarnemende hoof van die Afdeling Menslike Voeding, wat die dryfkrag was agter die ontwikkeling van die webwerf.

"Die eerste komponent is 'n blog (die Home Page), waar interaksie tussen gebruikers plaasvind en waar o.a. gratis toegang verleen word tot opvoedkundige materiaal vir pasiëntvoorligting. Daarna meld jy aan op die RenalSmart-toepassingsprogram (die Application), wat gebaseer is op nier-ruilyste - voedselsoorte wat saam gegroepeer is volgens voedingswaarde, en wat met mekaar uitgeruil kan word solank dit in dieselfde groepering val. Die pasiënt se mediese en kliniese inligting word op die program ingevul en na aanleiding daarvan werk die program die korrekte dieetvoorskrif, maaltydplan en spyskaart vir die pasiënt uit."

Daar word egter terselfdertyd voorsiening gemaak vir die dieetkundige om haar kliniese oordeel te gebruik en af te

wyk van die standaard prosedures indien dit nodig sou wees.

Herselman verduidelik dat nierpatiënte spesiale voedingsbehoefte het wat deur middel van dieet aangespreek word. "Byvoorbeeld, wanneer 'n pasiënt nog nie op dialise is nie, word die inname van proteïene en ander voedingstowwe dikwels beperk. Wanneer hy of sy egter op dialise is, verloor die pasiënt sekere voedingstowwe wat vervang moet word deur middel van die dieet, terwyl ander stowwe weer beperk moet word. Die pasiënt wat peritoneale dialise ondergaan het ook ander dieetbehoefte as die pasiënt wat hemodialise ondergaan."

Sy sê dit is kompleks en baie tydrowend vir dieetkundiges om 'n nierdieet uit te werk, veral vir diegene wat nie nierpatiënte op 'n gereelde basis sien nie. Waar so 'n proses tot 'n uur kan duur, doen die RenalSmart-program dit binne 'n ommesientjie.

Hoewel die program nie met 'n winsmotief ontwikkel is nie, moet dieetkundiges registreer en krediete koop om die toepassingsgedeelte van die program te gebruik. Hierdie foie word aangewend om die webwerf in stand te hou en verder te ontwikkel. Dieetkundiges wat die diens wil gebruik, kan krediete aanlyn koop.

Een krediet word vir 'n nuwe pasiënt benodig terwyl 'n opvolgkonsultasie 'n halwe krediet kos.

Herselman sê twee M-studente in die Afdeling Menslike Voeding is tans besig om 'n resepte-lêer vir nierpatiënte te ontwikkel en dit sal vanaf Januarie op die webwerf verskyn. Hierdie resepte word spesifiek ontwikkel om in die behoeftes van nierpatiënte te voorsien en word almal vir aanvaarbaarheid in dialise pasiënte getoets.

"Die Renal Smart-stelsel is 'n InnovUS-befondste projek en Brian Spears en Julian Roberts van Informasietegnologie op die hoofkampus het gehelp om dit te ontwikkel terwyl Johan Loubser en Magriet Treurnicht gehelp het met die skep van die blog. Die program is só ontwikkel dat dit deurlopend opgedateer kan word.

Vervolg op bladsy 43



Digitale Rewolusie in Tygerberghospitaal

Die omslagtige dril-oefening wat deur die jare die neem van X-strale en ander liggaamsbeeldings gekenmerk het, word binnekort ingrypend verander wanneer Tygerberghospitaal, soos ander hospitale en radiologie-departemente in die openbare en privaatsektor, digitaal gestroomlyn word.



Dr Otto Schulze

In die annale van die geneeskunde staan Wilhelm Konrad Röntgen se ontdekking van X-strale, aan die einde van die 19e eeu, opgeteken as een van die groot deurbrake wat die mediese rewolusie van die 20ste eeu sou inlei. Vandag het die tegnologiese rewolusie van die 21ste eeu hierdie diagnostiese 'wonderwerk' van die vorige eeu ingehaal, digitaal omvorm en op 'n nuwe snelbaan geplaas.

Om te verstaan wat die digitale X-straalrewolusie beteken, help dit om te fokus op die dril-oefening wat tot dusver met die neem van X-strale gepaard gegaan het:

Jy besoek jou huisdokter met 'n beseerde arm en hy wil vasstel of die arm gebreek is. Hy stuur jou met 'n briefie na die naaste radiologie-praktyk in jou omgewing. Daar aangekom, sit jy in die wagkamer tot jy geroep word. Jy trek 'n hospitaaljurk aan, 'n radiografis neem die nodige X-strale en jy trek aan en gaan blaaï weer deur 'n ou tydskrif in die wagkamer terwyl 'n radioloog jou X-strale bekijk. Hy dikteer sy bevindingsverslag aan 'n tikster wat dit uittik en saam met die X-strale in 'n koevert plaas. Dit word aan jou oorhandig en jy gaan terug na jou dokter wat jou besering op grond van die radioloog se bevindings, behandel. 'n Soortgelyke proses speel hom af as jy 'n hospitaal pasiënt is – behalwe dat 'n portier jou in 'n rystoel na die Radiologie-afdeling binne die hospitaal neem.

Hierdie proses is nou vinnig aan't verander, soos die meeste pasiënte bin-

nekort sal ontdek – indien hulle dit nie reeds ontdek het nie. Die X-strale wat die radiografis geneem het, gaan nie meer in die tradisionele bruin koevert aan jou oorhandig word nie. In die hospitaal en selfs in die privaatpraktyk, gaan dit waarskynlik jou dokter se rekenaar virtueel bereik nog voor jy weer by hom kan uitkom. Alternatiewelik, kan die radioloog jou met 'n kompaktskyf, waarop die strale gestoor is, terugstuur.

Digitale X-strale is nog nie die norm in gesondheidsorg in Suid-Afrika nie, maar openbare en private hospitale, sowel as private radiologiepraktyke is landwyd besig om dit die norm te maak, sê dr Otto Schulze, 4de jaar kliniese assistent in die US Fakulteit Gesondheidswetenskappe se Afdeling Radiodiagnose en Wes-Kaapse leier van 'n projek om oor die volgende paar jaar, X-straalfilms in alle openbare hospitale in die provinsie met digitale beelding te vervang.

Die Wes-Kaap is twee jaar gelede voor die keuse geplaas om oor te skakel toe daar besluit moes word of ou X-straaltoerusting vervang moet word met filmgebaseerde masjiene, en of daar oorgeskakel moet word na 'n digitale X-straal masjien.

'n Aantal faktore het 'n rol gespeel in die besluit om te digitaliseer, sê Schulze, "onder meer koste, wat heelwat laer in die digitale wêreld is. So byvoorbeeld word bedryfsonkoste soos film, chemikalieë en menslike hulpbronne uitgeskakel en produktiwiteit word verhoog want oomblikke nadat die foto geneem is, word

dit digitaal saam met die radioloog se verslag, na die dokter (of gesondheidsinstansies) gestuur, waar dit op die dokter se rekenaarskerm verskyn. Dit hoef dus nie meer deur die pasiënt of 'n portier na die dokter geneem te word nie".

Hy sê mediese beelding soos ons dit ken word gekenmerk deur frustrasies soos verlore X-straalpakkette; verlore of onleesbare aansoekvorms en ondersoekverslae; onnodige administrasie; mediese besluitneming wat in wiede gery word deur X-strale wat verlore raak, en lang wagtye. "Beeldingsdepartemente soos Radiologie of Kerngeneeskunde, het nog altyd probleme gehad het met die bestuur en bewaring van die groot hoeveelhede X-strale en beeldingsmateriaal wat hulle hanteer. Beeldingsbestuur behels die administrasie van versoeke vir beeldingsondersoeke, die uitvoer van beeldingsondersoeke, die verspreiding van die beeldingsmateriaal en verslae, die argivering van ondersoekmateriaal en resultate en die herwinning daarvan op 'n later stadium. Dit is 'n hulpbron-intensiewe verantwoordelikheid wat staat maak op 'n lang ketting van menslike interaksies, wat dikwels misluk."

Volgens Schulze is dit 'n probleem in beide die private en openbare sektor – en die oplossing is nie in 'n enkele inligtingstelsel geleë nie maar in die ferm integrasie van vier aparte, virtuele inligtingstelsels wat bestaan uit die digitale toerusting en elektronies met mekaar gekoppel is – naamlik 'n PACS (*Picture Archiving and*

Communication System, oftewel 'n beeldingsargivering- en kommunikasiestelsel), 'n RIS (Radiologie-inligtingstelsel) en 'n HIS (Hospitaal-inligtingstelsel). "In terme van die ou stelsel wat in Tygerberghospitaal gebruik is, moet die pasiënt se naam en demografiese gegewens herhaaldelik – tot nege keer! – uitgeskryf word, ondanks die feit dat dit reeds op die rekenaar vasgelê is."

Die funksies van die nuwe stelsel sien só daaruit:

- Die plakker op die pasiënt se lêer of X-straal lêer verteenwoordig die Hospitaal-inligtingstelsel (HIS). Pasiënte-inligting en demografiese gegewens word in hierdie stelsel gestoor. Die inligtingstroom begin wanneer die pasiënt by die hospitaal aanmeld en sy demografiese data op die HIS vasgelê word.

Hierdie deel van die proses is soortgelyk aan die pasiëntelêer wat alle kliniese notas, resultate van bloedtoetse, medikasiekaart en waarnemingskaart bevat.

- Die papierwerk wat deel is van die X-straal-versoekvorm word vervang deur die Radiologie-inligtingstelsel (RIS) wat verantwoordelik is vir werksvloei en funksies soos die elektroniese aanvraag van beeldingsondersoeke; goedkeuring en beplanning van beeldingsondersoeke; goedkeuring vir die beplande ondersoeke vanaf mediese fondse; skedulering van die ondersoeke; voorsiening van die nodige voorafgaande inligting en afspraakbesonderhede aan die verwysingsdokter en die pasiënt; die skep van 'n werklys vir die radiografiste en radioloë; die verspreiding en argivering van verslae oor beeldingsondersoeke; voorsiening van rekenings- en koderingsinligting aan die HIS, en die voorsiening van statistiek aan die HIS en praktykbestuurders.

Hierdie deel van die proses kan vergelyk word met die administratiewe afdeling van Radiologie-departement, insluitend die goedkeuring en skedulering van dokters se aanvrae van beeldings, die skep van 'n werklys en die vorm waarop ondersoeke wat uitgevoer is, afgetik word, sowel as die diktering, tik, verifikasie en verspreiding van radiologie-verslae.

- Die X-straalpakket en films word vervang deur die PACS-stelsel (beeldingsargivering en kommunikasiestelsel) wat verantwoordelik sal wees vir die digitale berging, verspreiding en bestudering van digitale beeldmateriaal. Die stelsel bestaan uit hardeware soos beeldingstoerusting en –stasies, en sagteware vir outomatiese argivering; die bestudering en manipulering van sagteware en die outoma-

tiese verspreiding van ondersoekresultate. Die ou stelsel wat in Tygerberghospitaal gebruik is, was duur en het talle hulpbronne vereis, o.m. X-straal-koeverte (wat die hospitaal R35 000 per jaar kos), meer as 900vk meter bergingsruimte, en meer as 60 voltydse liasseerklerke. Die X-straalpakkette, wat tientalle ondersoeke kan bevat en op rye-lange rakke gestoor word, word voortdurend aan beskadiging blootgestel.

In die nuwe digitale stelsel word die portier (of die telefoonnetwerk wat verwysingsdokters, radiografiste, klerke en radioloë met mekaar verbind) vervang deur rekenaar-netwerke, terwyl die rekenaar waarin die beeldingsmateriaal in 'n groot digitale bergingsruimte bewaar word, vergelyk kan word met die huidige X-straal-stoorkamer.

- Die ou beeldingstoerusting word omgeskakel na digitale beeldingstoerusting. Die mees merkbare verandering is in die X-straalkamers wat nou omskep word in gerekenariseerde Radiografie- (oftewel CR of *Computed Radiography*) of digitale Radiografie- (DR) kamers. "DR-tegnologie is soortgelyk aan die gebruik van 'n digitale kamera, wat nie 'n filmkasset gebruik nie," sê Schulze. "CR-tegnologie gebruik nog kassette, maar die beeld word direk vasgevang en daar word geen film geproduseer nie. Daar word tans CR- en DR-eenhede op die eerste vloer van die Radiologiedepartement in Tygerberghospitaal geïnstalleer."

- Die digitale aaneenskakeling, of integrasie van die toerusting en die verskillende stelsels kan vergelyk word met departementele samewerking om gesamentlike doelwitte te bereik, sê Schulze.

Hy wys daarop dat die stelsel toegang bied tot groot hoeveelhede inligting en dat die digitale beskikbaarheid van hierdie inligting, belangrike implikasies inhou vir bv kliniese navorsing of ouditerings om bv vas te stel hoeveel skanderings na-uurs by Tygerberghospitaal gedoen word.

Dit kan ook 'n sleutelrol speel in die groeiende praktyk van telemedisyne wat dokters en spesialiste in 'n hospitaal soos Tygerberg in staat stel om pasiënte in ander hospitale oor afstande van honderde kilometer te behandel.

"Terselfdertyd kan die projek ook die diens wat ons aan pasiënte in Tygerberghospitaal lewer, betekenisvol verbeter – mits almal hulself vertrou maak met die projek en deelneem aan die implementering daarvan."



Back pain and other woes in

With the expansion of computer-based education in the Western Cape and other parts of the country, more and more high school learners are exposed to the same pains and injuries that plague adult computer users. To find remedies for computer-related injuries, staff and students in the Physiotherapy Division are conducting a wide-ranging spinal health project, aimed specifically at the adolescent, painfully slouched in front of his workstation.



At baseline sitting



After 10 minutes of sitting



Student with marker stems

Some years ago, when the computer age was dawning, a newspaper headline asked the question: “Is you computer trying to kill you?”

While subsequent research on the health risks inherent in prolonged computing failed to confirm any such homicidal intent, it does show that in the workplace, frequent computer use can cause a host of related injuries, ranging from musculoskeletal problems such as sore muscles, stiffness, headache and backache, to repetitive strain injuries such as carpal tunnel syndrome, joint pain, swelling and numbness, as well as eye strain and vision problems.

Today computers are no longer confined to the adult workplace. In fact, computer work stations have become one of the features of the modern educational environment – also in South Africa. In the Western Cape, for instance, projects such as the Education Department’s Khanya project is specifically aimed at promoting the sciences and computer-based education in schools in the Province.

It was against this background of increased computer usage in our schools that Prof Quinette Louw of the SU Physiotherapy division in the Faculty of Health Sciences, combined forces with the Western Cape Education Department and other partners, to study the effects of the computer on learners who spend long hours in front of their work stations. Given the high frequency of back pain and other computer-related injuries in adults, as well as the high costs to the individual and society of adult back pain, Louw and her team were of the opinion that adolescent back pain could well become a health priority in our computer-driven society. In developing countries such as South Africa,

almost no research has been done to determine the prevalence of adolescent back pain.

With the assistance of staff and students in the Division, Louw initially launched a pilot project to study the effects of computer usage at eight Western Cape schools and 1905 learners between the ages of 13 and 18 completed questionnaires on the subject. Louw and her team also inspected the schools’ computer laboratories to determine if they maintained ergonomic standards.

In the end they found that 70% of the computer users suffered from muscle and joint pains while those who spent long hours in front of a computer screen, also complained of lower back pain.

As a result of the study, the team made recommendations to the schools regarding adjustments to the workstations to make them more ‘muscle- and joint friendly’ and they promoted healthier habits with regard to computer usage. At the same time, Louw obtained funding from the CSIR to launch a wide-ranging Spinal Health Research Project - a highly successful endeavour that includes, to date, three completed studies, seven journal articles, three postgraduate degrees, international presentations and various accolades for members of the team. Recently, two postgraduate students involved in these projects - Mss Sjan-Mari van Niekerk and Yolandi Brink – became the first SU students to register for PhD degrees in Physiotherapy. A member of the team, Ms Leoné Smith, won the prize for the best young researcher at the Faculty’s Annual Academic Day in 2007, while Ms Yolandi Brink won the Faculty’s prize for the best postgraduate student. Furthermore, the research emanating from the Division,

our computer-driven society

is contributing to a growing body of work on computer-related injuries in adolescents, and methods to help these kids to avoid the repetitive strain injuries that plague so many adult computer users.

The studies were conducted under Louw's leadership and significant findings that emerged to date, included:

Headaches and neck pain in adolescent school students who spend long hours on the computer

This study, conducted by Ms Leoné Smith, studied the association between computer exposure and headaches and neck pain among 1073 high school students in Western Cape schools. "We found that headaches were associated with high psychosocial scores and were more common among girls. At the same time, we found an association between neck pain and long hours of computing for school students, which confirms the need to educate new computer users, specifically school students, about appropriate ergonomics and postural health," says Leoné.

She points out that research on neck pain due to computer usage may be divided in two categories, namely ergonomics and education on both posture and computer habits. "Posture may be influenced by the equipment and furniture, as well as the student's own posture, muscle strength and habits, such as the time he or she spends in an inert position in front of the computer. To address the high preva-

lence of neck pain related to computer use, school computer laboratories should be assessed to determine whether standard ergonomic guidelines are adhered to in the design and layout of these laboratories".

Leoné says the placement of the computer 'mouse', screen and keyboard may also play a role in the poor posture of learners. If this is not done correctly, it can lead to too much muscle activity which in turn can lead to muscle soreness and neck pain. Unnatural positions of the neck and spine may also affect neural structures and in such instances, neural factors may contribute towards the experience of neck pain".

At the same time, the length of computing sessions – which lasts at least 40 minutes in South Africa - should be considered to reduce the prevalence of neck pain, she says. Efforts should also be made to investigate the use of adjustable furniture and computer equipment in school laboratories to fit the majority of students in computing classes".

Leoné believes that spinal health education should extend beyond the school setting since students should be able to apply the basic principles of safe computing use in any setting.

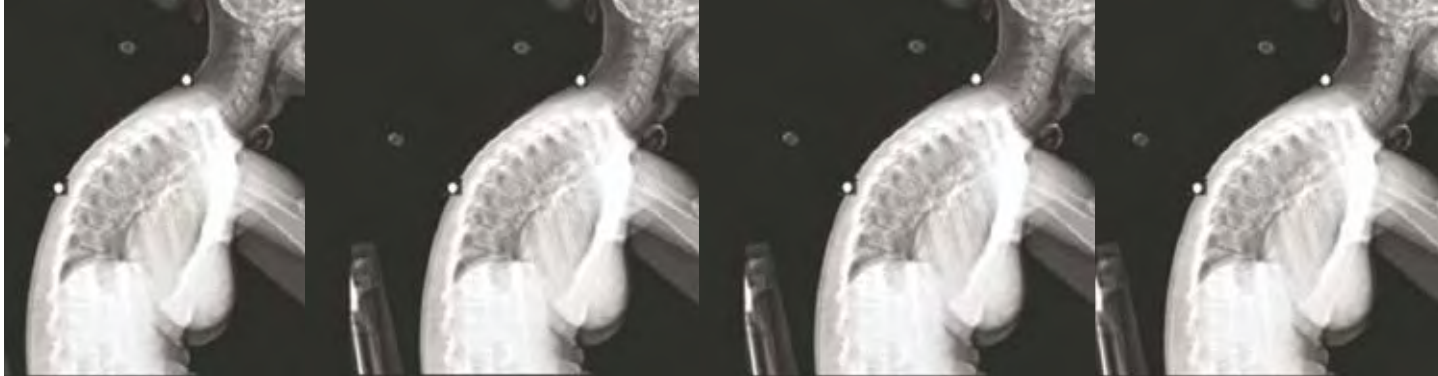
Focusing on posture

One of the postgraduate students in the Physiotherapy Division, Ms Sjan-Mari van Niekerk, has narrowed her research focus area, specifically to study posture and the role it plays in the musculoskeletal pain experienced by computer users who spend long periods in front of their computers. This research will form the basis of her doctoral studies in Physiotherapy.

She says there is an increase in the number of learners using computers and in the time spend in front of computers in the Western Cape. For instance, the Khanya project reports that 36 959 computers have been provided to so-called Khanya schools and more than 74 000 learners are reaping the benefits of the project.



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COMPUTERS and the teenage spine – continued from page 31

A large part of Sjan-Mari's work focuses on the study of human body measurements, known as anthropometry. Work in this field includes ergonomic furniture designs and the examination and comparison of populations.

According to Sjan-Mari, school furniture design plays an important role in correct sitting posture "but alarmingly little research has been conducted in school settings."

As a result, Sjan-Mari has designed a study to examine the match between the dimensions of school computer laboratory furniture and the anthropometric measurements of high school learners. The study aims to match the anthropometrics of high school learners with their computer workstations at school.

She has conducted a systematic review of published research on sitting posture measurement tools, but could find no papers on the use of photographs to measure sitting posture – even though photographs have been reported as a measure of adult, adolescent and children's standing posture.

"Given the reliability and efficiency of photographs and the longevity of digital records, as well as the cost-effectiveness of digital photographs to measure standing posture, we felt that this method was feasible to use in measuring sitting posture in adolescents."

She also came to the conclusion that the only trustworthy measure of the position of spinal structures was radiography, but the ethical and health implications of this method were a cause of concern, especially since it involves the irradiation of healthy spines in growing adolescents.

However, a solution was found in a low dose radiography method, known as LODOX, that was recently developed in South Africa, and used in the mining industry to detect smuggled diamonds. Eventually she tested low dose radiographs as well as a photographic method known as the Photographic Posture Analysis Method (PPAM) which consists of digital photos, used in combination with special computer software.

The posture of 39 adolescents between the ages of 15 and 16 years of age was assessed in simulated computer workstations and different angles measured (see examples at the top of the page). "The findings of this study suggest that photographs provide valid and reliable indicators of the position of the underlying spine in sitting. Clinically it is important to know whether a patient is showing true progression in relation to a postural intervention".

Based on the results of this study, Sjan-Mari plans to use PPAM in her research efforts to match the anthropometrics of adolescent learners with their computer workstations at school.

Focusing on sitting spinal posture and prolonged sitting

Ms Yolandi Brink, who is also registered for a PhD-degree in the Physiotherapy Division, is exploring the role of spinal sitting posture, prolonged sitting and psychosocial factors in the development of musculoskeletal pain in high school computer users.

Yolandi says that these factors have been associated with musculoskeletal symptoms among adolescents but whether spinal posture, prolonged static sitting or psychosocial factors are the cause of musculoskeletal pain among the country's high school students is uncertain. She has therefore conducted an observational study to determine whether sitting postural alignment and psychosocial factors contribute to the development of upper quadrant musculoskeletal pain in grade ten high school students working on desktop computers. Thus she examined the sitting postural alignment, depression, anxiety and computer use of 104 asymptomatic students at baseline. "At three and six months post baseline, the area and intensity of upper quadrant musculoskeletal pain was determined. Twenty seven students developed upper quadrant musculoskeletal pain due to seated- or computer-related activities. The neck angle (neck positioning) was found to be predictive of upper quadrant musculoskeletal pain after six months. However the study found no relationship between depression, anxiety and upper quadrant musculoskeletal pain among the students".

These findings have prompted the basis of her PhD studies. In collaboration with the SU's Engineering faculty, she is developing a three-dimensional postural measurement device in order to better describe the sitting posture of high school students. Asymptomatic students will also be followed for one year to see whether sitting posture, prolonged sitting or psychosocial factors are truly responsible for the increased prevalence of musculoskeletal pain among computing students.

Yolandi is also preparing pamphlets on health risks uncovered by the Physiotherapy team during their research on computer usage among high school students in the Western Cape, as well as their recommendations to prevent computer-related injuries. One of the pamphlets is aimed at teachers and the other at students. "The pamphlet for teachers comprises of information from all the research projects conducted by our team, i.e. the work of Leoné, Sjan-Mari and myself. It also includes our results and details of future projects. The second is aimed at students who use computers at school or elsewhere and includes results of our research, specifically the risk factors that can lead to musculoskeletal pain.



► Van links: Drr Bonga Chiliza, Lize Weich en Claudia De Clercq (voor).

Psigiatriese hulp in 'n dwelmkrisis

Omdat psigiatriese patologie onlosmaaklik deel is van bykans alle substansmisbruik, is die US se Psigiatriedepartement toenemend betrokke by navorsing en dienste op hierdie gebied.

Die groeiende probleem van alkohol- en dwelmmisbruik het die Departement Psigiatrie aan die US Fakulteit Gesondheidswetenskappe oor die afgelope jare geroep om toenemend betrokke te raak by navorsing, dienste, opleiding en ander inisiatiewe in hierdie veld – nie net in die Wes-Kaap nie, maar oor die hele Provinsie.

Benewens 'n psigiatriese buitepasiëntediens en twee substansenhede vir alkohol rehabilitasie en heroïenonttrekking by Stiklandhospitaal, het die Departement ook 'n uitreikprogram wat ondersteuning en opleiding bied aan regeringsdepartemente en nie-regeringsinstansies soos SANRA, Toevlug, De Novo, Sultan Bahu en Hesketh King, waar psigiaters uit die Fakulteit, klinieke doen vir die hantering van psigiatriese siektes onder dwelmverlaafdes.

Drr Lize Weich en Claudia De Clercq, wat die substansmisbruik-vleuel van die Departement se dienste by die Stiklandhospitaal beman, is betrokke by opleidingsinisiatiewe by klinieke oor die hele Provinsie – vanaf die Kaapse Metropol tot die Weskus-Wynlandstreek en die Suid-Kaap. Terselfdertyd gee hulle gereeld praatjies vir die publiek oor substansmisbruik. Hulle is ook betrokke by die twee substansenhede by Stiklandhospitaal en hulle hanteer gekompliseerde en psigiatriese ko-morbiede substansversteurings by Stikland Hospitaal.

Hoewel metamfetamien, oftewel Tik die Wes-Kaap in 2003 soos 'n getyggolf getref en sedertdien groot dele van die

Provinsie oorspoel het, speel alkohol nog steeds die grootste rol in substansmisbruik, sê Weich. “Oor die afgelope maande het heroïenmisbruik egter ook problematiese afmetings begin aanneem en terselfdertyd plaas dagga, wat met komorbiditeit presenteer, groot druk op psigiatriese beddens.

Dit is ook 'n probleem met Tik-psigose wat soos skisofrenie presenteer en gepaard gaan met psigotiese en aggressiewe gedrag sowel as angs en depressie.”

Uit 'n gesprek met die dokters is dit trouens duidelik dat psigiatriese patologie byna onlosmaaklik deel is van substansmisbruik en -verslawing.

► **Alkohol:** “Alkoholmisbruik gaan by-voorbeeld nie net gepaard met angs en depressie nie, maar ook met hallusinose waar die persoon stemme hoor, of alkoholwansteurings wat 'n persoon byvoorbeeld kan laat glo dat sy/haar lewensmaat ontrou is. Alkohol veroorsaak ook kognitiewe skade en toestande soos Korsakoff-psigose ('n toestand wat hoofsaaklik voorkom in chroniese alkoholisme en veroorsaak word deur alkohol-verwante vitamien gebreke wat lei tot ernstige geheuesteurings.)

► **Dagga:** Dagga word ook geassosieer met verskeie psigiatriese komplikasies en daar is talle studies gedoen oor die assosiasie van dagga met skisofrenie.

► **Tik:** Weich en De Clercq wys daarop dat Tik eweneens psigose kan veroor-

saak. “Tikgebruikers kan 'n langdurige psigotiese prentjie ontwikkel, asook depressie en angssteurings. Hulle doen ook kognitiewe skade op na langdurige Tikgebruik. Dit is moontlik dat van hierdie skade selfs permanent is.”

► **Heroïene:** Heroïene is nie net uikers verslawend nie, maar gebruikers neem maklik noodlottige oordosisse.

► **Kokaiene** is 'n duur middel en die meeste gebruikers wend hulle tot die goedkoper weergawe – ‘crack’ kokaiene, wat aanleiding gee tot gewelddadigheid, kognitiewe skade, angs en depressie.

Volgens die dokters het Tikgebruik in die Wes-Kaap sedert 2003 epidemiese afmetings begin aanneem – soveel so dat die Mediese Navorsingsraad 'n mandaat van die Provinsiale Departement van Gesondheid gekry het om die epidemie uit alle hoeke onder die loep te neem.

Dit beteken, onder meer, dat alle opnames van Tikslagoffers in psigiatriese hospitale ondersoek word, en dat daar gekyk word hoe dit die bedstatus in die verskillende hospitale

raak. Weich sê die Tik-epidemie in die Wes-Kaap word veroorsaak deur 'n gekristalliseerde, en hoogs verslawende weergawe van metamfetamien, naamlik die sg ‘crystal meth’, wat goedkoop en maklik

Tik het die Wes-Kaap in 2003 soos 'n getyggolf getref en sedertdien groot dele van die Provinsie oorspoel.

Vervolg op bl. 35

Teenage substance

The SU Department of Psychiatry not only provides extensive services to the public, the Department of Health and drug rehabilitation centres in the Western Cape, but also focuses the research spotlight on two of the major substance abuse problems in Western Cape communities: teenage binge drinking and the massive and growing problem of Tik addiction.

Developing brains of adolescents seem to be particularly vulnerable to the damaging effects of methamphetamine, popularly known as Tik.

This drug is at the heart of an epidemic of drug and alcohol addiction in communities of the Western Cape. Tik addiction in particular has grown into a serious health and social problem in recent years, tearing lives and communities apart.

In the SU Department of Psychiatry, Prof Paul Carey is focusing the research spotlight on drug- and alcohol-exposed and unexposed young people between the ages of 12 and 15 years in an effort to understand drug and alcohol addiction during this particularly vulnerable time of brain development. He recently presented preliminary findings indicating that significant changes can occur in the brain function of adolescents after only one year of using Tik.

Carey is currently conducting two major investigations in this field. With grants from the US National Institutes of Health, he is utilising the electroencephalography (EEG) laboratory and the new 3 Tesla brain scanner in the Cape Universities Brain Imaging Centre (CUBIC) on the Tygerberg Campus to study brain function in teenagers who have been exposed to alcohol and Tik and compare them with a well-matched control group of teenagers who have not had the same exposure. The brain imaging techniques that he uses to conduct the studies are completely safe and non-invasive and therefore ideally suited for studies on children.

For the first study, he uses an NIH funded EEG laboratory in CUBIC to look at cognitive function and changes in the brains of binge drinkers when they per-



Prof Paul Carey uses functional magnetic resonance imaging to scan the brains of Tik users

form decision making tasks relevant to their drug use choices and risky behaviour in the community. The MRI component of this work is specifically examining the changes that occur in the white matter, the most rapidly developing tissue in the adolescent brain. This is a five-year study, funded by a grant by the National Institute for Alcoholism and Alcohol Abuse (NIAAA) and is being conducted in partnership with Neurobehavioral Research Inc, a leading private neuroscience research organisation based in Hawaii. The study employs two social workers who go into communities to recruit youngsters to take part in the study. They visit families in their homes and screen kids in schools. At the same time, they provide support and give educational talks on the dangers of alcohol abuse. The study is conducted with strong support from the Department of Education in the Western Cape," Carey says.

The second is a two-year pilot study, conducted in collaboration with an investigator from Harvard University in the United States and funded by a NIH

grant from the National Institute of Drug Abuse (NIDA). The research is also conducted on teenagers, recruited from communities, but comprises functional magnetic resonance imaging (fMRI) to compare the brains of Tik users to those of healthy controls to determine the effects of the drug on the functioning brain both inside and outside the scanner. Carey says the study on the adolescent subjects will help the researchers understand early markers of vulnerability for drug use.

"We recently presented preliminary results that show significant changes in brain activation between Tik users and healthy controls, suggesting that changes in brain function occur very early in the drug use trajectory. These changes are seen in kids who have only been using Tik for a year. They were not intoxicated or withdrawing when the brain imaging was done."

As the study progresses, Carey hopes to determine whether these changes persist and if his subjects are amenable to treatment. He also hopes to uncover the long-term effects of Tik-use on the brain.

Carey points out that researchers in the Western Cape can make valuable contributions to this field using MRI and EEG technology that is available here at Stellenbosch University. This ability is complemented with access to sizeable patient populations of adolescent drug users and well matched controls. "This puts us in an excellent position to search for answers to some of the most burdensome problems facing societies worldwide, but South African society in particular."

abuse under the microscope

Tik and schizophrenia

Schizophrenia seems to be one of the possible consequences of Tik addiction, says Dr Bonga Chiliza, a specialist psychiatrist in the SU Department of Psychiatry.

In his research on first episode psychosis patients, Chiliza studied a series of brain scans, taken from adolescents, which identifies the area of the brain affected by schizophrenia. These scans also show the severity of the consequences of Tik use, months after the patient has stopped using the drug.

“After 14 months of being clean, the brain has still not returned to normal.”

Chiliza points out that the human brain was most vulnerable to the damaging effects of Tik during the adolescence. This

is clearly illustrated by the brain images which were taken from the group of teenagers who participated in a study conducted by the Psychiatry Department.

“The images show that brain shrinkage is a further consequence of Tik use,” he says.

“Since adolescence is such a vulnerable time for brain development, teenage Tik users are much more likely to end up with chronic mental illness.”

The aim of Chiliza’s study of patients with schizophrenia and Tik addiction is to establish a special programme to treat this group. He sees about 40 patients every year but his unit accounts for only about one-third of affected youngsters throughout the Cape Metropole.



Ms Khiala Klein assists Mr Jean-Paul Fouché in demonstrating the EEG equipment in CUBIC.

“It’s difficult to tell whether the schizophrenia or the Tik abuse comes first because schizophrenia manifests during the teenage years, and that’s when youngsters usually start smoking Tik,” he says.



Alkohol



Dagga



Tik



Heroïene

Psigiatriese hulp in 'n dwelmkrisis -

vanaf bladsy 33

in onwettige ‘laboratoriums’ vervaardig word. Die wit of af-wit kristalle word dan relatief goedkoop in ‘strooitjies’ verkoop. Die kristalle word gerook, verpoeier en gesnuif, mondelings geneem of binne-aars toegedien. In Suid-Afrika word dit gewoonlik gerook deur die kristalle in 'n glas gloeilamp waarvan die element verwyder is, of in 'n tik pyp (genoem 'n 'lolly' of 'popeye'), te verhit en die dampe te rook.

Sy sê Tik laat gebruikers aanvanklik goed voel. Hulle is hoog en hoef nie te slaap nie, die libido styg en meisies hou daarvan omdat hulle gewig verloor. Langtermyngebruik van die middel lei egter tot ernstige gewigsverlies, ernstige velprobleme, onbeheersde woede of geweldadige gedrag.

Dit gee ook aanleiding tot sielkundige probleme soos verwar- ring, verswakte konsentrasie en geheue, hallusinasies, slapeloos- heid, depressie, psigose, paranoia en paniek. “Dit is nog nie duidelik of die langtermyn skade wat deur Tik veroorsaak word, permanent is nie.”

Die dokters wys daarop dat verslawing 'n chroniese breinsiek- te is en dat slagoffers wat behandel word, dikwels terugvalle het. “As 'n persoon eers verslaaf is gee die middel van verslawing ook nie meer plesier nie.”

Hoewel behandelingsuitkomstes ‘redelik’ is, bly verslawing 'n moeilike toestand om te behandel omdat dit so 'n gestigmati- seerde siekte is.



Links: Prof Ben van Heerden en studente in spesiale Fondasiefase T-hempies

ONDERRIG

'n Kurrikulum vir ons tyd

Die Universiteit Stellenbosch se Gesondheidswetenskappe kurrikula word weer onder die loep geneem.

In die Gesondheidswetenskappe, wat deurlopend gekonfronteer word met 'n ontploffing van nuwe kennis en hoogs moderne nuwe tegnologie, is dit die taak van diegene wat gemoeid is met die opleiding van die dokters en gesondheidswerkers van môre, om te verseker dat hierdie opleiding tred hou met die eise van die tyd.

Dit is daarom wêreldwyd die gebruik om gesondheidswetenskappe kurrikula gereeld te hersien, sê prof Ben van Heerden, hoof van die US Fakulteit Gesondheidswetenskappe se Sentrum vir Gesondheidswetenskappe Onderrig. Suid-Afrika is geen uitsondering nie. Benewens kurrikula-vernuwings in die 1970's, het die US FGW in 1994 begin met 'n omvattende proses van kurrikula hervorming. Dit is binne vyf jaar afgehandel en met goedkeuring van die Universiteit, die nasionale Departement van Onderwys en die betrokke beroepsrade, in 1999 geïmplementeer. Hierdie kurrikula is in 2002 weer hersien – en vòòr die eerste studente, wat in terme van die nuwe kurrikula opgelei is, hul opleiding aan die einde van 2004 voltooi het, het veranderinge in

Suid-Afrika se gesondheidsorgomgewing, die Fakulteit weer eens genoop om indringend na die kurrikulum te kyk.

Hierdie stap is veral noodsaak deur die tweejaar-internskap wat in 2007 vir MBChB-studente geïmplementeer is, sê Van Heerden. "Dit was 'n besluit van die Beroepsraad wat beteken dat mediese studente vir nege jaar moet studeer voor hulle onafhanklik kan praktiseer. Ons wou kyk of ons die huidige kurrikulum van ses jaar na vyf jaar kon verkort, maar dit het gou geblyk dat daar sekere dinge is wat ons eenvoudig nie vir die studente binne slegs vyf jaar kan leer nie. Die argument dat hulle hierdie dinge tydens hul internskap sou leer, was egter nie vir ons aanvaarbaar nie en ons het besluit dat dit veiliger is om die huidige sesjaar-kurrikulum te behou en slegs sekere aspekte daarvan te hersien. Uit die agt Gesondheidswetenskappe-fakulteite in die land, het slegs drie – die Universiteit van die Vrystaat, Walter Sisulu-universiteit en die Universiteit van KwaZulu-Natal – besluit om hul MBChB-kurrikulum na vyf jaar te verkort.

Hoewel die US nie bereid was om die kurrikulum te verkort nie, is daar tog

besluit om sekere veranderinge te maak. Hierdie veranderinge is veral gerig op interdisiplinêre leer en onderrig en die integrasie van basiese en kliniese gesondheidsorg, sê Van Heerden en prof Juanita Bezuidenhout, voorsitter van die Fase I-program.

Sluitelastepekte van die hersiene kurrikulum:

Om gestalte te gee aan die US FGW se strategie van optimalisering van interdisiplinêre leer en onderrig; om natuurwetenskappe binne die eerste semester meer binne die konteks van die gesondheidswetenskappe aan te bied, en om die nuwe eerstejaars beter voor te berei vir hul studies en toetse tot die onderskeie professies, is daar vier nuwe modules ontwikkel waarby 'n wye spektrum van kundiges betrokke was.

By hierdie modules is, onder meer, ingesluit:

- ▶ Persoonlike en professionele ontwikkeling, wat fokus op spesifieke vaardighede soos wetenskaplike skryfvaardighede, tydsbesteding, stresshantering en taalvaardighede in Afrikaans, Engels en Xhosa. Met hierdie module wil die Fakulteit studente bewus maak en voorberei vir die omgewing waarin hulle gaan werk.
- ▶ Lewensvorme en funksies van kliniese belang, wat biologie, anatomie, histologie, fisiologie en chemie insluit.
- ▶ Chemie vir gesondheidswetenskappe, wat chemie behels wat aangepas is vir die gesondheidsorgomgewing.
- ▶ 'Gesondheid in Konteks', wat fokus op wat gesondheid is en hoe gesondheid en siekte gemeet word. Benewens 'n bietjie geskiedenis, sluit dit databestuur, bewysgebaseerde praktyk en epidemiologie in.

Na afloop van die ses-maande lange Fondasiefase skei die programme, met MBChB-studente wat twee groot modules doen, naamlik die *Basis van Siekteprosesse* en die *Beginsels van Terapie*.

'Vriendelik, gasvry en sonder DWANG'

Tygerberg Maties haal die angel uit ontgroening met 'n wenleuse

Met die leuse, Vriendelik, gasvry en sonder dwang, het studente op die Tygerbergkampus die angel so effektief uit ontgroening gehaal, dat hulle vanjaar die Universiteitskild vir die beste oriënteringsprogram gewen het.

Ewe trots op dié prestasie is mnr Noël Bekkers wat vanjaar aangestel is in die pos van Res-Ed-koördineerder op die Tygerbergkampus. Dié pos is deel van 'n nuwe US-program waarvolgens alle Matiekos-huise in klusters opgedeel word in 'n poging om die akademie nader aan die koshuise te bring en terselfdertyd interaksie tussen kultuur- en portuurgroepe te bevorder. Die koshuise op die Tygerbergkampus vorm een van die sewe koshuis-klusters aan die US.

Weens sy geografiese ligging en die impak van groot getalle buitelandse studente, het die Tygerbergkampus unieke behoeftes waarna omgesien moet word, sê Bekkers. "Byvoorbeeld, ons wil verseker dat al ons studente as trotse Maties groei en ontwikkel - al is hulle nie op die hoofkampus nie, en ons wil kultuurinteraksie tussen ons plaaslike studente en buitelandse studente in die hand werk. Benewens die groot getalle elektiewe studente op die kampus, het ons tans ook voorgraadse studente uit lande soos Lesotho, Namibië en Zimbabwe. Om te verseker dat daar na al die studente se behoeftes omgesien word - "akademies, maar ook op die gebied van sport en sosiale interaksie" - werk Bekkers nou saam met die Tygerberg Studen-



Mnr Noël Bekkers, Res Ed koördineerder

teraad. "Een van die belangrike doelwitte van die program is om meer afgeronde graduandi te lewer".

Bekkers was self 'n student aan die FGW en het sy opleiding in Menslike Voeding hier voltooi. As inwonende hoof van Kerkenberg het hy ook die Kampus deur en deur leer ken.

Sleutelveranderinge aan die kurrikulum – vanaf bladsy 33

Implementering

Die hersiene kurrikulum met sy multiprofessionele aanslag, is ná bykans ses jaar van beplanning aan die begin van 2008 geïmplementeer. MBChB- en BSc Fisioterapiestudente het volledig saam deelgeneem aan die Fondasiefase, terwyl BSc Dieetkunde- en B.Arbeidsterapiestudente aan sommige van die modules deelgeneem het.

"Een van die oogmerke van die hersiene kurrikulum is om in ooreenstemming met die uitkomst van die Stellenbosch Gesondheidswetenskaplike, 'n deeglike begrip van die interdisiplinariteit tussen die verskillende dissiplines, te vestig. Die feit dat studente vanuit bykans al die verskillende dissiplines aan die Fondasiefase deelgeneem het, en ook dat dosente van die verskillende dissiplines betrokke was, het bygedra daartoe dat dié begrip deeglik inslag gevind het," sê dr Alwyn Louw van die Sentrum vir Gesondheidswetenskappe Onderrig (SGWO), wat ten nouste by die implementering van die fondasiefase betrokke was.

"Tydens onderhoude wat ons na afloop van die eerste semester met deelnemende studente gevoer het, het hulle begrip en waardering getoon vir die feit dat hul reeds aan die begin van hul studies aan hierdie interprofessionele konteks blootgestel is".

'n Ander oogmerk met die Fondasiefase is om 'n gesonde grondslag ten opsigte van studie aan die universiteit, en ook ten opsigte van die algemene welwees van die studente, te vestig.

"Fokus is dus geplaas op die persoonlike en professionele

ontwikkeling van die student. Hierdie benadering is met gemengde gevoelens ontvang, en die sukses daarvan sal met verloop van tyd bepaal kan word. 'n Verdere oogmerk was om die natuurwetenskappe meer binne die konteks van die gesondheidswetenskappe aan te bied. Studente het baie positief op hierdie vernuwing reageer".

Navorsing

Die SGWO is tans betrokke by 'n aantal navorsingsprojekte wat die implementering van die hersiene kurrikulum onder die loep neem. Een van die projekte fokus hoofsaaklik op die inter- en intrapersoonlikheids- en vaardigheidsontwikkeling van studente, terwyl 'n ander projek die sukses van die implementering van die Fondasiefase opsigself bestudeer.

"Die doel van albei hierdie projekte is om so gou as moontlik leemtes en gebreke in die kurrikulum te identifiseer, sodat regstellings en veranderinge aangebring kan word waar nodig".

Volgens Louw is daar vroeë aanduidings dat die implementering van die nuwe fondasiefase suksesvol was, maar hy glo dit is nog te vroeg om die sukses daarvan in die geheel te bepaal.

"Die FGW is baie trots op dit wat reeds bereik is, maar besef ook dat deurlopende skaafwerk nodig is om die kurrikulum voortdurend aan te pas en te verbeter.

"Verskeie gesprekke en vergaderings binne module- en tema-konteks is reeds gehou, en word ook verder beplan, ten einde 'n verbeterde fondasiefase-kurrikulum gereed te hê vir 2009."

Excellence rewarded

During 2008, various researchers and academic staff in the SU Faculty of Health Sciences received recognition for excellence in various areas of endeavour – from the University, the Faculty and national, as well as international organisations.

Peter Donald se verkenning van die 'bekende'

Prof Peter Donald het 30 jaar gelede begin om vir hom 'n navorsing-nisgebied af te baken tussen die laboratorium en die Tuberkuloseklyniek. Vandag geniet hy erkenning as 'n wêreldkundige op hierdie gebied, en as een van die voorste kliniese navorsers in Suid-Afrika.

Om suksesvol navorsing te doen, hoef 'n mens nie 'n esoteriese projek of vakgebied te kies nie, sê Donald, tans emeritus professor van Pediatrie en Kindergesondheid aan die US Fakulteit Gesondheidswetenskappe. "Jy kan dikwels groter sukses behaal deur ooglopende probleme te verken binne die vakgebied waarin jy jou bevind."

Dit was met hierdie benadering dat hy sowat 30 jaar gelede die eerste treë gegee het op die terrein van tuberkulosenavorsing, en waar hy vandag erkenning geniet as 'n wêreldkenner en een van die voorste kliniese navorsers in Suid-Afrika. En in 2008 het die besondere onderskeiding hom te beurt geval om die eerste, en tot dusver die enigste navorser in die US Fakulteit Gesondheidswetenskappe te word om 'n A-gradering van die Nasionale Navorsingstigting (NNS) te ontvang.

Die doel van die NNS se evaluering en gradering van Suid-Afrikaanse navorsers, is om 'n globaal-mededingende wetenskaplike stelsel in Suid-Afrika te vestig. Navorsers word gegradeer na gelang van die omvang en gehalte van hul navorsingsuitsette; eweknie evaluasie en kennersmenings wat plaaslik en in die buiteland ingewin word.

Toe Donald dertig jaar gelede sy navorsingsloopbaan in die Departement Pediatrie en Kindergesondheid aan die US se Fakulteit Gesondheidswetenskappe begin het, was tuberkulose nie 'n vakgebied wat groot internasionale belangstelling uitgelok het nie.

Navorsers in ontwikkelde lande het trouens geglo dat infeksiesiektes die nekslag toegedien is met die koms van antibiotika en entstowwe, "maar in Suid-Afrika het ons van beter geweet want ons is daagliks met tuberkulose in ons gemeenskappe gekonfronteer. As klinici het ons dus navorsing op verskillende fasette van die siekte gedoen en teen die tyd dat die res van die wêreld begin kennis neem het van die omvang van die nuwe tuberkulose epidemie, was ons navorsing hier reeds ferm gevestig," sê hy.

Donald het deur die jare verskillende aspekte van die siekte bestudeer, onder meer die epidemiologie van tuberkulose, pediatriese tuberkulose, nuwe TB-middels en TB-meningitis - 'n veld waarin hy vir jare reeds in vennootskap met prof Johan Schoeman werk. "Ek en prof Schoeman het in die 1980's reeds ons eerste kinderpasiënte met TB-meningitis gesien. Dit het aanleiding gegee tot baie oorspronklike navorsing, wat wêreldwyd aandag getrek, en 'n groot aantal publikasies opgelewer het."

Prof Peter Donald staan vandag aan die voorpunt van navorsing wat spruit uit die hernieuwe, wêreldwye belangstelling in kindertuberkulose, sowel as die gesamentlike TB- en MIV-epidemies in Suid-Afrika.

Hoewel Donald reeds in 2004 afgetree het, gaan hy steeds onverpoosd met sy navorsing voort - soveel so dat hy vandag aan die voorpunt staan van navorsing wat spruit uit die hernieuwe, wêreldwye belangstelling in kindertuberkulose; die gesamentlike TB-MIV-epidemies, en die aanleiding wat

dit gee tot weerstandige- en uifers middelweerstandige tuberkulose. Hy sê sy sukses op navorsingsgebied is grootliks te danke aan spanwerk, die gehalte van die mense met wie hy deur die jare kon saamwerk en die geleentheid wat die Fakulteit – en in die besonder sy departementshoofde in Pediatrie en Kindergesondheid – aan hom gebied het om sy navorsing te kon doen.

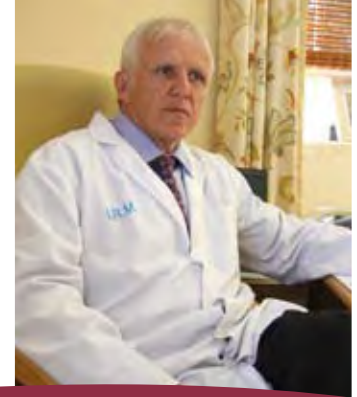
"Dan was daar ook die belangrike ontwikkelings wat in die afgelope jare op die gebied van navorsing in die FGW plaasgevind het," sê hy.

"In die eerste plek was daar die groeiende samewerking en vennootskappe met navorsers en navorsingsinstansies op internasionale vlak, en tweedens was daar die baie nouer samewerking tussen kliniese en laboratoriumnavorsers in die FGW. Die kliniese en epidemiologiese navorsing wat ons op die gebied van tuberkulose doen, sou nooit soveel erkenning gekry het sonder die samewerking met laboratoriumnavorsers nie," sê hy.

Hoewel hy 'n Engelssprekende Kapenaar is wat letterlik langs die see in Kampsbaai gebore en getoë is, was Donald een van die eerste groep studente wat hul studies aan die US se destyds nuutgestigte Fakulteit Geneeskunde voltooi het.

Hy het ook tussen 1973 en 1976 sy spesialistestudies aan die Fakulteit voltooi. Daarna het hy vir 'n tyd lank in Brittanje en Australië gewerk en selfs 'n jaar lank by die wetenskaplike basis op Antarktika.

In 1979 het die destydse hoof van Pediatrie en Kindergesondheid, prof Louwna Keet, hom in die Departement aangestel – en met sy belangstelling in infeksiesiektes en Gemeenskapspediatrie, het hy vroeg reeds tuberkulosenavorsing begin doen.



International honours for Prof Tommie Victor

The Faculty's status as one of the foremost institutions worldwide in the field of tuberculosis research, was reinforced in 2008 when Prof Tommie Victor of the Molecular Biology and Human Genetics division of the SU Department of Biomedical Sciences on the Tygerberg Campus was honoured by the International Society for Infectious Diseases for his outstanding research on multi-drug resistant tuberculosis (MDR TB), as well as extremely drug resistant tuberculosis (XDR TB).

Victor was invited to deliver a paper at the Society's international conference in Kuala Lumpur, Malaysia and during the conference, he was awarded the Society's Sanofi Pasteur award.

A senior research scientist in the Department of Biomedical Sciences, Victor is part of the team of Stellenbosch scientists who have played a pivotal role in establishing SU as one of the foremost institutions

worldwide in the field of tuberculosis research. As a result of the work done by the TB Unit, it has also been recognised by the South African government as a 'TB Centre of Excellence.'

With Victor's assistance, the head of the unit, Prof Paul van Helden initiated molecular research on TB in the middle of the 1980's and in the early 1990's only a few researchers in the Department were working in the field. However, as the epidemic of this highly contagious, airborne respiratory disease was sweeping across the country, research became increasingly focused in this field of study. Today, a team of almost 70 researchers, students, post-doctoral fellows, contract workers and technologists are studying various aspects of the epidemic. Victor played a prominent role in establishing a highly integrated, inter- and multi-disciplinary team with local and international collaborators that boasts more than 200 research papers in

highly rated international journals and a number of patents. At the same time, he established one of the largest molecular epidemiology databases for the drug susceptible and drug resistant epidemic of tuberculosis in the southern hemisphere.

The researchers are working in partnership with the South African government, local institutions such as the National Health Laboratory Service (NHLS), international scientists and large consortia, supported by granting bodies such as the European Union, NIH, Wellcome Trust and the Bill and Melinda Gates Foundation.

In addition to basic laboratory research, Victor and his team endeavour to translate their findings into practical applications that will benefit patients, communities and the country's TB control programme. "A good relationship with the local TB control programme and local communities is, in fact, the key in all our studies," he says.

'n Goue medalje vir reprodktiewe navorsing

Die Suid-Afrikaanse Akademie vir Wetenskap en Kuns het in 2008 sy goue medalje vir natuurwetenskaplike prestasie aan prof Thinus Kruger, hoof van die Departement Verloskunde en Ginekologie toegeken.

Hierdie medalje word toegeken vir hoogstaande werk van praktiese uitvinding of toepassing, en vernuf wat op wetenskaplike en/of proefondervindinglike grondslag gebaseer is.

Die Akademie het daarop gewys dat Kruger hom oor die afgelope 25 jaar nasionaal en internasionaal onderskei het as 'n topnavorsers en klinikus op die gebied van infertilititeit. "n Eenheid vir Reprodktiewe Biologie sonder weerga in Afrika het onder sy leierskap ontwikkel. Hy was leier van die span wat verantwoordelik was vir die eerste suksesvolle 'proefbuisbaba' in Afrika in 1984."

Kruger het ook die afsnypunte ontwikkel vir sperm-morfologie, wat fertiele mans van infertiele mans onderskei. Hierdie afsnypunte staan bekend as die Tygerberghospitaal Streng Kriteria

en word deur die Wêreldgesondheidsorganisasie (WGO) as internasionale standaard aanvaar en bevorder.

Onder die leierskap van Kruger, was navorsers en klinici in die Eenheid vir Reprodktiewe Biologie oor die jare vir tientalle 'eerstes' op die gebied van infertilititeit verantwoordelik, onder meer die eerste bevrore embryo swangerskap vanaf 'n blastosist; die eerste suksesvolle swangerskap in Suid-Afrika ná 'n ware intrasitoplasma inspuiting van 'n sperm in 'n ovum in 1995, en die eerste swangerskap na laserbehandeling op 'n embryo in 2006.

Foto's bo-aan bladsy

Links: Prof Peter Donald

Middle: Prof Tommie Victor (right) received his award at a ceremony held during the conference of the International Society for Infectious Diseases.

Regs: Prof Thinus Kruger

Toekenning vir program om hoë risiko tienergedrag te bekamp

Dr Petrus Steyn



Dr Petrus Steyn van Verloskunde en Ginekologie se Gesinsbeplannings-eenheid het gedurende die jaar 'n toekenning van die Wes-Kaapse Onderwysdepartement ontvang vir sy bydrae tot kurrikulumontwikkeling, spesifiek in die WKOD se Lewensoriënteringskomponent.

Die Leefstyl-oriënteringspakket wat Steyn in 2003 ontwikkel het om hoë risiko seksuele gedrag onder Graad 10 en 11-leerders te verminder, het sedertdien soveel opvoedkundige aansien verwerf dat dit tans ingelyf is by die kurrikula van drie van die land se provinsies.

Daarbenewens het Steyn en 'n span kundige medewerkers ook in 2007 nuwe modules vir die pakket, *Today's Choices*, vir matriekleerders ontwikkel.

Die projek het begin toe Steyn, in samewerking met die Nederlandsgebaseerde organisasie, *World Population Foundation*, en

die Wes-Kaapse Onderwysdepartement, 'n opvoedkundige CD-ROM ontwikkel het wat spesifiek gerig is op groot getalle jong adolessente. Die hele inisiatief is van stapel gestuur in reaksie op 'n studie van die Universiteit Stellenbosch wat die neiging tot hoë risiko seksuele gedrag onder adolessente in die Skiereiland onder die soeklig geplaas het. Die studie het ook bevind dat skole die ideale omgewing bied om groot getalle jongmense deur middel van 'n opvoedkundige projek te bereik. Sewe-en-negentig persent van Suid-Afrikaanse adolessente tussen die ouderdomme van 10 en 14 is op skool.

Gesondheidswerkers en onderwysers is nie altyd opgelei om doeltreffend met hierdie jongmense te kommunikeer ten opsigte van hul seksuele gedrag nie. 'n Moontlike oplossing vir die probleem was dus die ontwikkeling van 'n professionele, bewysgebaseerde opvoedkundige pakket.

Service excellence award for diabetic eye care

In South Africa's national academic health care environment, Prof Bob Mash of the SU Department of Family Medicine and Primary Care is known as one of the foremost experts and promoters of Family Medicine.

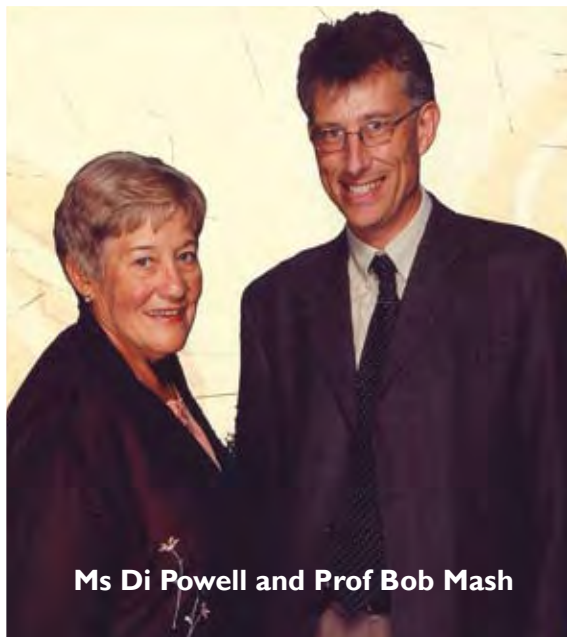
It was his involvement in a city-wide community project in Cape Town, however, that won him an award for service excellence from the Western Cape Premier in 2008. The project for which Mash received the award is known as the Diabetic Care project which involves the improvement of chronic care for more than 40 000 diabetic patients who are served by the Metropolitan District Health Services (MDHS).

He points out that severe retinopathy is one of the complications of diabetes, affecting about 55% of all patients. Diabetic care in the public sector is provided by a network of 45 community health centres where patients usually attend a special 'diabetic club' run by nurses who screen the patients and deal with queries and complaints. It was found, however, that screening for retinopathy was deficient at most of the 'clubs', either because no ophthalmoscope was available or because the ophthalmoscope was not working – and various other reasons. It therefore became clear that a new approach which did not rely on the use of an ophthalmoscope by the 'club' staff, was required.

In response to this problem, Norva Nordisk and the World Diabetic Foundation donated a mobile digital camera for retinal photography to the MDHS to use at diabetic 'clubs' in the metropole. Initially the camera was used at three pilot sites in Khayelitsha, Retreat and Elsie's River and it soon became clear that detection and treatment of retinopathy could be dramatically improved by the use of a mobile retinal camera. It was therefore

decided to extend the retinal screening service to a further 15 health centres and subsequently to the whole MDHS.

Mash received the award together with Ms Di Powell, manager of the Eye Care Programme for the Metropole.



Ms Di Powell and Prof Bob Mash

Urology – ‘first’ among its peers for 24 years

For almost a quarter of a century, Stellenbosch University’s Urology Division has regularly won the top prizes awarded by the SA Urological Association at its biennial conferences - and 2008 was no exception.

At the organisation’s most recent conference, the two top prizes were once again awarded to members of the SU Division. Although there are Urology departments at seven of the South Africa’s eight medical schools, 21 of the 27 prizes awarded over the past 24 years by the Urological Association were won by registrars and consultants attached to SU and Tygerberg Hospital.

Storz prize

The Storz prize for the most outstanding young Urologist in South Africa was awarded to Dr André van der Merwe, senior lecturer in the Urology Division of SU/Tygerberg Hospital.

The prize is awarded every two years and is sponsored by the German company Storz, a manufacturer of endoscopic instruments. The prize winner is chosen by the executive committee of the SA Urological Association on the basis of the achievements of the recipient in the first ten years since registration as a urologist. The evaluation is based on the applicant’s publications, congress presentations and other contributions to urological service delivery and training. The first Storz prize was awarded in 1988 to prof Chris Heyns, currently head of the Urology Division, and subsequently 7

of the 11 recipients of this prize were attached to SU/Tygerberg Hospital.

Bard and Nol van Blerk prizes

The Bard prize for the best paper presented by a registrar at the congress was won by Dr Amir Zarrabi, also of SU/Tygerberg, for a paper titled, *Computer directed robotic gantry system for gaining precisely targeted needle access to the renal collecting system during percutaneous nephrolithotomy (PCNL)*.

The project was conducted in collaboration with Mr Jean-Pierre Conradie, a MScIng student in the Department of Mechanical and Mechatronic Engineering at Stellenbosch, who wrote the computer programme and designed the robotic gantry. The sponsor of the Bard prize is a firm which manufactures disposable urological equipment.

The first Bard prize was awarded in 1984 to prof Chris Heyns, and subsequently 8 of the 10 recipients were registrars at SU/Tygerberg Hospital.

Zarrabi also received the Nol van Blerk prize for his paper entitled, *Confirmed versus suspected urogenital tuberculosis in a region with an extremely high prevalence of pulmonary tuberculosis*.

The prize is awarded by the Urological Association for the best paper by a registrar which has also been submitted in the form of a manuscript suitable for publication.

The prize is named after prof Nol van Blerk, first professor in Urology at the University of the Witwatersrand.



Dr André van der Merwe



Dr Amir Zarrabi



Ms Kate Joyner

Domestic violence in the spotlight

A research article on the provision of emergency care for, and psychological distress in survivors of domestic violence has earned Ms Kate Joyner of the Nursing Division special honours at the 12th National Family Practitioner Congress that was held in Rustenburg in August.

As principal author of the article, Joyner received the Dumo Baqwa award for the best original research article published in South African Family Practice in 2007. Her co-authors were L Theunissen, L De Villiers, S Suliman, T Hardcastle and S Seedat. The award comprises 1 000 Euro, donated by the Federal Belgian Government through its *VLIR Own Initiatives Programme* and R5 000 donated by Abbot Laboratories, SA. Joyner is the first nurse to win this award.

The research study tried to ascertain the number of treatment referrals and information about

protection orders given to survivors of domestic violence presenting for emergency trauma care, as reported at the one-month visit; to obtain a profile of violent incidents and injuries, and to assess self-esteem and post traumatic and depressive symptoms in the aftermath of injury.

Joyner and her colleagues surveyed 62 participants who presented in the acute aftermath of domestic violence, as defined by the Domestic Violence Act of 1998, over a period of 12 weeks at the Trauma and Resuscitation Unit of a Level One trauma centre in an urban public hospital in South Africa.

They came to the conclusion that even though domestic violence poses significant health threats and costs to the health system, it appears to be a neglected area of South African health care.

The winning article can be read on the web address: <http://www.safpj.co.za/index.php/safpj/article/view/546/684>



Prof Jan Lochner

Afrikaans as geneeskunde-vaktaal het oor die afgelope 70 jaar tot volwaardigheid gegroei en as “soepel, parate en gebruikersvriendelike” kommunikasiemedium word dit ten volle deur pasiënte en gesondheidswerkers benut. Daarom was dit belangrik om die US se *Woordeboek van Afrikaanse Geneeskundeterme*, wat byna 30 jaar gelede die lig gesien het, te hersien en te verseker dat hierdie belangrike woordeboek tred hou met die kennisontploffing van die laaste dekades, sê prof Jan Lochner, ouddekaan van die US Fakulteit Gesondheidswetenskappe.

In 'n wêreld waar Engels die *lingua franca* vir internasionale kommunikasie is, die taal is waarin vakkundiges internasionaal kommunikeer en publiseer en die taal is van die Internet, die rekenaar en DVD / CD-programme, kan 'n mens seker tereg vra of daar nog 'n noodsaak of behoefte is aan 'n geneeskundige vakwoordeboek in Afrikaans.

Vir die ouddekaan van die US Fakulteit Gesondheidswetenskappe, prof Jan Lochner, is die antwoord 'n onomwonde, “ja!”

“Solank Afrikaans nog gepraat word in Suid-Afrika, móét dit sy regmatige aandeel behou, veral op voorgraadse vlak om tersiëre onderrig toeganklik te maak vir studente met Afrikaans as moedertaal.

“Ons het ook groot sektore histories-benadeelde pasiënte wat Afrikaans praat en hulle kommunikeer graag met hul dokter in 'n taal wat hulle verstaan. Dit word

ook deur 'n groot getal gesondheidswerkers gepraat.”

Dit was met hierdie passie en oortuiging dat Lochner bykans vyf jaar gelede begin het om voltyds die *Woordeboek van Afrikaanse Geneeskundeterme* (WAG) – wat in 1979 deur die ouddekaan, prof Andries Brink en die Taalkomitee van die FGW saamgestel is – te hersien en op te dateer met terme, begrippe en trefwoorde wat voortspruit uit die kennisontploffing van die laaste dertig jaar. Die hersiening is grootliks moontlik gemaak deur befondsing wat deur die Trusteeraad van *Het Jan Marais Nasionale Fonds* vir die projek bewillig is.

Die afskopfase van hierdie reuse taak is nou, in samewerking met 'n groot aantal medewerkers uit die Fakulteit, woordeboek-vakkundiges, leksikograwe en taalkundiges, bykans afgehandel en die tweede uitgawe van die WAG word voor die einde van die jaar in elektroniese formaat deur Pharos-woordeboeke op die Internet en op laserskyf beskikbaar gestel. Om tred te hou met nuwe ontwikkelings in die gesondheidswetenskappe, sal hierdie uitgawe deurlopend opdateer word en die aanvullende trefwoorde sal jaarliks in elektroniese formaat beskikbaar gestel word, sê Lochner.

Die WAG het in 1979 met 30 000 lemmas (oftewel trefwoorde) verskyn,

agt herdrukke beleef en is steeds sonder gelyke in Suid-Afrika. Dit is verklarend en bied onder meer dele in Afrikaans na Engels, én Engels na Afrikaans. Die nuwe elektroniese uitgawe is reeds met byna 8 000 lemmas aangevul en volgens Lochner word selfs 'n hoër tempo van uitset vir die toekoms beplan. “Ons streef na die toevoeging van meer as 10 000 lemmas en sublemmas binne die volgende vyf jaar.” Hierdie nuwe lemmas is veral afkomstig uit 'nuwe' vakrigtings soos MIV/Vigs en groeiende vakrigtings soos molekulêre biologie, farmasie, epidemiologie, biostatistiek, primêre gesondheidsorg, etiek en ander.

In sy voorwoord tot die nuwe uitgawe skryf Lochner dat sekere van die fundamentele wetenskappe byna onherkenbaar gemoderniseer is, byvoorbeeld geneeskundige fisiologie, psigiatrie en farmakologie, terwyl ander feitlik herskep is, byvoorbeeld geneeskundige biochemie en molekulêre biologie. Terselfdertyd moes die nomen-

klatuur van die aanvullende gesondheidswetenskappe soos fisio- en arbeidsterapie, en ander, aangevul word om tred te hou met nuwe insigte en

ontwikkelings.

Lochner het medewerkers plaaslik en landswyd gewerf, onder meer van die Potchefstroom Universiteit, die Nasionale Taaldiens en die Universiteit van die Vry-

WAG kry 'n verjongingskuur

staat. Hy het die meeste bewerkings self geskryf en dan aan vak-, taal- en leksikografiese deskundiges voorgelê vir verbeterings. Tussendeur het hy deurlopend veelvuldige veranderings en verbeterings aan die eerste uitgawe aangebring. Uiteindelik was die 'nuwe' WAG 'n 'formidabele taak' wat moontlik gemaak is deur nuwe rekenaarprogramme- en tegnieke."

Oor die voorkoms van klaarblykbare anglisismes in geneeskunde vaktaal, sê Lochner dat dit reeds met die eerste uitgawe van WAT ter sprake gekom het. Daar is gevolglik destyds gepoog om alle terme te verafrikaans, maar dié poging was nie altyd geslaag nie. "Baie terme het sommer vroeg reeds in die stof gebyt, soos blindederm, harsingslymklier en speekbeen vir die appendiks, hipofise en radius onderskeidelik. Selfs in die gewone spreektaal het dié terminologie nie algemene inslag gevind nie."

Hy sê die afkeer aan die gebruik van sg. anglisismes is met-tertyd getemper deur die besef dat die Engelse vaktaal van die oorspronklike en meer beskrywende Griekse en Latynse stam-

woorde afgelei is. Gevolglik is toenemend klem gelê op die nomenklatuur van die 'oertale', hoewel die verafrikaanse spelling dikwels aanleiding gegee het, en steeds aanleiding gee tot meningsverskille. Soos in die eerste WAG-uitgawe, leun die lemmas in die nuwe uitgawe steeds op die oorspronklike Grieks en Latyn en wat na anglisismes mag klink is inderwaarheid terme waarvan die wortels vasgegroeï is in die vroegste geskiedenis van die geneeskunde. Lochner was deurlopend in kontak met die Taalkommissie van die SA Akademie vir Wetenskap en Kuns en hy het die *Afrikaanse Woordelys en Spelreëls* sover moontlik gevolg.

Nadat hy hom vir so lank in hierdie woordewêreld verdiep het, is Lochner van mening dat die Afrikaanse geneeskunde-vaktaal vandag op gelyke voet met sy Engelse eweknie staan en as wetenskaptaal, 'n belangrike brug bou na veral studente uit ander taal- en kultuurgroepe wat aan Afrikaanse universiteite studeer, en ook tussen ander Afrikaans- en Engelssprekendes in die geneeskundige wetenskappe.

'n Unieke diens vir dieetkundiges

Vanaf bladsy 27

Wat die dieetkundige inhoud betref, is Nazeema Esau, 'n dieetkundige van Tygerberghospitaal, medeverantwoordelik vir die ontwikkeling van die program terwyl prof Demetre Labadarios van die Afdeling Menslike Voeding en prof Rafique Moosa, 'n nierspesialis en hoof van die Departement Geneeskunde, belangrike mediese insette gelewer het."

Dit het Herselman en haar span byna 'n jaar lank geneem om die program te ontwikkel en dit het tientalle interne proeflopieë ondergaan om probleme te ondervang en uit te sorteer. Daarna is dit by twee geleenthede ekstern getoets om te verseker dat dit seepglad loop voor dit in September 2008 vrygestel is.

Volgens Herselman kan die program enige plek ter wêreld gebruik word. Sy is nie bewus van 'n soortgelyke program elders nie, behalwe in Amerika waar daar wel 'n internetprogram is wat op die dieet van nierpatiënte gerig is, maar dit dek slegs pasiënte op hemodialise en dit dek nie Suid-Afrikaanse en inheemse voedselsoorte nie."

Hoewel die program tans net op die behoeftes van volwasse nierlyers gerig is, hoop Herselman om dit ook uit te brei vir kinders en persone met diabetiese nefropatie. Sy en ander medewerkers wil trouens die konsep in sy geheel uitbrei en voorsiening maak vir kategorieë vir oorgewig en diabetes, sê sy.

Hoewel dit 'n baie gespesialiseerde vakgebied is met 'n relatiewe klein teikengroep, het die webblad die afgelope twee maande reeds meer as 180 besoeke ontvang en 23 dieetkundiges het reeds geregistreer. Die projek is ook September by die 37ste EDTNA/ERCA Internasionale Kongres in Praag bekendgestel, en by 'n Voedingkongres in Pretoria.

Toegang tot die program word verkry deur die web-werf-adres: "<http://www.sun.ac.za/renalsmart>" OF www.renalsmart.co.za

Stellenboscher deur Franse tot ridder geslaan

Die diens wat dr Dawie van Velden oor die jare aan die wynbedryf gelewer het by wyse van die navorsing wat hy aan die Fakulteit Gesondheidswetenskappe gedoen het, het in 2007 besondere erkenning in Frankryk gekry toe Van Velden by 'n internasionale kongres in Bordeaux tot ridder geslaan is.



Dit was die derde internasionale kongres wat spesifiek gefokus het op die gesondheidsimplikasies van matige wynverbruik. Van Velden was trouens verantwoordelik vir die organisasie van die tweede Internasionale kongres oor Wyn en Gesondheid wat in 2005 in die hart van die Stellenbosch-wynland gehou is. Die eerste kongres was in Santiago, Chile, gehou. Al drie kongresse het spesifiek gefokus op die gesondheidsvoordele van matige wynverbruik en Van Velden is saam met die organiseerders van die ander twee kongresse vereer vir hul navorsing op wyn – spesifiek oor hoe dit die gesondheid van die mens kan beïnvloed.

Die drie kongresorganiseerders is tydens 'n glansryke seremoniële geleentheid tot ridders geslaan. Dit beteken dat hulle ewige trou moes sweer aan die wyn van die Bordeaux streek. Die toekenning geniet hoë aansien in die wynproduserende streke van Frankryk, en is 'n eeue-oue tradisie waarmee erkenning gegee word aan persone wat besondere dienste lewer ter bevordering van die vrug van die wynstok!



Mending our *Globetrotting ways*

At academic institutions worldwide, questions are asked today about the environmental impact of academic globetrotting and the size of the carbon footprint left behind when academics fly to destinations across the globe to attend international meetings and conferences. In this article, written for Tygerland, **Prof Bob Mash** ponders these problems and suggests some home-grown solutions.

The relentless rise in global carbon emissions is predicted to continue over the next 10 years. By 2015, if there is no reduction, then the impact on the world's climate will be both uncontrollable and catastrophic.

In the health sector the main risks are the direct effects of extreme weather conditions, changes in patterns of infectious diseases, effects on food production and freshwater; displacement of vulnerable populations and loss of income. Adverse effects in low income countries are likely to be much higher – loss of healthy life years is predicted to be 500 times more in Africa than in Europe.

The scientific community is in agreement that this phenomenon is due to human activity and is driven by a host of factors such as the burning of carbon fuels to make electricity, as part of industry or to transport ourselves and our products using the internal combustion engine. This, for example, is compounded by ever rising demand for more electricity and cars as well as inefficient and wasteful use of these resources. The rising demand is driven by increases in population as well as development that adopts the same environmentally harmful practices.

One of the major contributors is air travel due to the burning of jet fuel. Additional effects of aircraft on the atmosphere, such as condensation trails increase the warming effect by a factor of 2.7. While most other human activities such as the use of cars or production of electricity already have proven alternative technologies that can reduce emissions, there is no current alternative for travel by plane. At the same time air travel has become cheaper and amongst the more affluent part of the population, common place. A single return plane journey from Johannesburg to London produces an individual's annual quota of carbon - if we assume a quota based on the reduction necessary to avoid uncontrollable climate change. The unavoidable,

if unwelcome, conclusion for the small part of the population who travel by air is that 'if you fly, you destroy other people's lives'.

Academics and researchers are amongst the group of regular flyers and because climate change will have major public health impacts, should especially reflect on the need to fly. Researchers travel primarily to conduct research, particularly when there is international collaboration and to present research at conferences and meetings.

In the last year I have made the decision not to travel to international conferences as the environmental impact far outweighs the academic one. Keynote addresses can also be given by video conferencing or similar technologies. How many research projects consider their carbon footprint or include it in the budget?

Assuming as academics and researchers that we significantly reduce our overall flying time, it is unrealistic to demand an absolute prohibition. When air travel is necessary it has been proposed that planting trees can offset the effect. This is because mature trees over time will capture the carbon in their growth that was produced by the air travel. While it is not yet an exact science, a number of websites enable you to calculate the number of trees necessary to offset a particular flight.

For instance, Prof Elizabeth Wasserman and I traveled to Kampala to participate in the *Network: Towards Unity For Health Conference*. We therefore purchased three trees on our return to South Africa, and these were planted in the grounds of the Faculty where they will not only capture carbon, but also enhance the natural environment.

Since then, a number of colleagues and even our partners at other universities in South Africa and beyond our borders have bought into the idea – and as a result, several new saplings have made an appearance on the Tygerberg Campus!

THE SOUTH AFRICAN MEDICAL ASSOCIATION INVITES YOU TO BECOME A MEMBER

WHAT IS SAMA?

The South African Medical Association (SAMA) is a non-statutory, professional association for public and private sector medical practitioners. Registered as an independent, non-profit Section 21 company SAMA champions doctors' interests and causes in areas of Government health policy as well as in their interactions with other stakeholders in the health arena such as medical schemes. SAMA empowers doctors to bring health to the nation and acts a champion for doctors and patients. On behalf of its members, the Association strives for a health care dispensation that will best serve their needs.

WHY SHOULD YOU JOIN SAMA?

- **The Industrial Relations Unit assists members with:**

- Unfair dismissals and unfair labour practices
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- **Members of SAMA receive free copies of the South African Medical Journal (SAMJ) or Continuous Medical Education (CME) as well as the SAMA Insider (an A4 glossy magazine).**

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