



## UNIVERSITY OF CAPE TOWN

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### Proceedings of the University of Cape Town (UCT) Clinical Scholar's Programme Workshop on Increasing the Quality and Quantity of PhDs in the Clinical Sciences at South African and African Medical Schools

15 July 2011

Twelve Apostles Hotel, Oudekraal, Camps Bay

Cape Town

The programme of talks is available at the following website:

<http://www.medicine.uct.ac.za/Clinical%20Scholar/UCT%20Scholars%20Programme.htm>

#### Index Page

	Page
Delegates	2
Welcoming address: Professor Bongani Mayosi	3
Opening address: Professor Danie Visser	4
<b>Session 1: Setting the scene – what is the problem?</b>	
Implications of a bibliometric analysis of South Africa's outputs in clinical science: Professor Michael Kahn	4
Implications of the ASSAf report on clinical research and related training: Professor Wieland Gevers	4
Lessons from the oldest MD/PhD program in the USA: Associate Professor Tawanda Gumbo	5
Panel discussion	6
<b>Session 2: Funders plans and perspectives</b>	
What is the Discovery Foundation doing to increase the quality and quantity of PhDs in the clinical sciences?: Dr Maurice Goodman	6
What is the Department of Science and Technology doing to increase the quality and quantity of PhDs in the clinical sciences?: Ms Glaudina Loots	6
What is the South African Medical Research Council (MRC) doing to increase the quality and quantity of PhDs in the clinical sciences?: Dr Niresh Bhagwandin	7
What is the National Research Foundation (NRF) doing to increase the quality and quantity of PhDs in the clinical sciences?: Dr Romilla Maharaj	7
What is the Netcare Physicians Partnership doing to increase the quality and quantity of PhDs in the clinical sciences?: Dr Victor Litlhakanyane	8
<b>Session 3: Some examples and proposals – what are the solutions?</b>	
Using the MMed degree as a springboard for the accelerated production of MDs/PhDs: Professor Khaya Mfenyana	9
The Wits model for training clinician scientists: Professor Yosuf Veriava	9

A view from Nigeria: Professor Adesola Ogunniyi	10
The UCT intercalated BSc(Med)(Hons)/MBChB/PhD programme: Associate Professor Arie Katz	10
Challenges for introducing the UCT PhD programme for Audiology and Speech Pathology, Nursing, Occupational Therapy, Physiotherapy, Nutrition and Dietetics, and other four-year professional clinical degrees: Dr Merle Futter	11
The MBChB/MPH and postgraduate MPH programmes as a mechanism to increase the quality and quantity of clinician scientists: Associate Professor Landon Myer	11
What are the ways in which the HPCSA could streamline the registration process for clinician scientists?: Professor Letitia Moja	12
Portability between institutions: the HEQF perspective: Ms Judy Favish	13
<b>Session 4: Consensus on the way forward – what is to be done in order to increase the quality and quantity of clinical PhDs?</b>	
An envisaged model for the PhD Clinical Scholars Programme a 4-year professional degree: Dr Merle Futter	13
Challenges of the implementation of the UCT intercalated BSc (Med)(Hons)/MBChB/PhD programme: Associate Professor Arie Katz	14
Governance, Planning, Funding: Professor Bongani Mayosi	14
Closing address: Professor Sue Kidson	15
References	16
Acknowledgements	16
Acronyms	16



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**Convenors: Professor Bongani Mayosi, Professor Arieh Katz, and Dr Merle Futter, University of Cape Town on behalf of the partners of the UCT Clinical Scholars Programme (listed under Acknowledgements at the end of the report)**

A Workshop was held on 15<sup>th</sup> July 2011 at The Twelve Apostles Hotel, Oudekraal, Camps Bay with the aim of bringing academic leaders together to discuss ways of increasing the quality and quantity of PhDs in the clinical sciences at South African and other African medical schools. The programme of talks is available at the following website: <http://www.medicine.uct.ac.za/Clinical%20Scholar/UCT%20Scholars%20Programme.htm>

There were 73 delegates who represented the following sectors:

- Senior academics, clinicians, researchers and student representatives from the UCT;
- Deans or their representatives from Stellenbosch University, University of the Free State; University of KwaZulu-Natal, University of Limpopo, University of Pretoria, University of Witwatersrand, Walter Sisulu University; and the University of Texas Southwestern Medical School, USA;
- External partners: Kigali Health Institute, Rwanda and University of Ibadan, Nigeria;
- Funders: Discovery Foundation, Medical Research Council, Netcare Health Funders and National Research Foundation;
- Academy of Science of South Africa;
- Department of Science and Technology;
- Health Professions Council of South Africa; and
- Media representatives: *Medical Chronicle*, *South African Medical Journal*.

#### **Welcoming address: Professor Bongani Mayosi, Head of the Department of Medicine, UCT**

Professor Mayosi opened the workshop stating that the best people in South Africa to address the question of how to increase the number and quality of PhDs in clinical sciences were present in the conference. The delegates were made up of medical scientists, funders, policy makers, and media representatives. He said it was remarkable that almost all South African universities with medical schools were present to discuss increasing research production, which is unusual because the institutions generally work in isolation of each other and in competition with each other in the area of research. Put together, the research output of the South African universities is said to be less than the productivity of the University of Oxford, so it would be advisable for African universities to give up territorial aspirations and become one unit which seeks to compete with the world.

He went on to explain the day's topics and presentations and that the intention of the day was to introduce robust discussion and inputs about new ways to deal with the apparently intractable problem of increasing the number and quality of PhDs in clinical science. Until now we have recognized that there is a problem, but very few solutions have emerged. By the time we leave this afternoon we must have a plan that will allow us to move forward and deal with some of the major problems we have. In this project we really seek the future in which we have world leaders from Africa who can stand their own on any stage in the world. It is also fitting

that this meeting should be opened by Prof Danie Visser, the Deputy Vice-Chancellor for Research at UCT, who is the driver of the research effort at UCT and represents the Vice Chancellor, Dr Max Price, who has made the meeting possible through funding from the Vice Chancellor's Strategic Award.

**Opening address: Professor Danie Visser, Deputy Vice-Chancellor, Research, UCT**

Professor Visser paid tribute to the people who had the vision and recognized the opportunity to revitalize clinical research in South Africa and to re-establish the country as a leader in this field. He acknowledged Professors Wieland Gevers and Jimmy Volmink who first thought to have a study by the Academy of Science of South Africa (ASSAf) on clinical research, and Professor Mayosi who with 12 other members formed the panel who conducted the study.<sup>1</sup> The ASSAf report made it very clear that clinical research is vital to the development of the country and also that it is imperative that the universities, private sector and government stand together to make this opportunity a real one. From a university perspective clinical research ties in with what a university should be about in the developing world. All the best universities in the developing world which have the respect of the rest of the world, in some way or another, devote their attention to making a difference to the living conditions around them and to the people that they serve. The coincidence in a country like South Africa of the high burden of disease, coupled with the high expertise in research, make it almost a crime for us to ignore the possibilities that present us to make a difference in the world.

We have an enormous range of talented researchers in South Africa and in his capacity as DVC Research, he is very fortunate to come into contact with some of this research. He serves on the Boards of the UCT Institute of Infectious Disease and Molecular Medicine; The UCT Lung Institute; Centre for the AIDS Programme of Research in South Africa (CAPRISA) at the University of KwaZulu Natal (UKZN) where UCT is a partner; and the Centre for Biomedical Tuberculosis research at Stellenbosch University where UCT has also recently become a partner. When one sees the research that is done at these institutes and centres and in all the departments at UCT, as in other universities that have direct links to clinical research and all the research units that have relevance to clinical research, one becomes aware of the enormous pool of talent. A while ago the people from the Karolinska Institute who came to South Africa said that if there is a Nobel Prize lurking somewhere in South Africa it might very well be in tuberculosis research.

Those are the kinds of talent we have gathered in South Africa and when one uses the wonderful new tools that have been made available to us one can see where emerging research is happening, especially in the field of infectious diseases. We need investment by government at both central and provincial levels and by universities. The international funders who fund so much of clinical research in South Africa today will presumably always, and should, remain part of the scene, but in the end, only our own investment can help us to drive the agenda for clinical research and establish ourselves as leaders in this area in the world. At UCT, Greg Hussey and Bongani Mayosi's cooperative venture with Groote Schuur Hospital to create a Clinical Research Centre in the hospital is the kind of initiative and leadership we need to realize the potential we have. UCT has partners with other universities, not only in South Africa, but also outside the country: in South Africa with Walter Sisulu and the Limpopo University and outside of South Africa with Ibadan and Kigali Institute of Health. It is very important that, when we talk about revitalizing clinical research, we have it as a cooperative venture in South Africa where everybody stands together so that South Africa will be able to use its geographical advantage and make a real difference in the world.

UCT is involved in creating the next generation of academics. One of its many projects which work towards this goal is with the Carnegie Corporation where we are partners with WITS and with the University of Ghana and Makerere University to create, in a number of fields, a set of new academics. UCT chose the areas of civil engineering, economics and infectious diseases. Of the 45 new academics UCT produced more than half are from the general area of infectious diseases and, what is being done here with the Intercalated MBChB/PhD in partnership with these other academic institutions, brings into sharp focus this training of the next generation of clinical researchers.

Professor Visser explained that DVCs do not have money and so cannot hand out money, but what a DVC can do is to indicate and try and influence the university as to what are important research priorities. For him and the University Research Committee, support for clinical research is crucial. They think that that is one of the areas where UCT and its partners can make a difference and are pushing very hard for support in this area. Professor Visser continued that he, personally, is very supportive of this programme. It is one of the most important programmes for research at UCT and he called upon his counterparts at other South African universities to work together in order to be able to make the revitalisation of clinical research a priority in the South African research scene.

**“Implications of a bibliometric analysis of South Africa’s outputs in clinical science” by Professor Michael Kahn, Centre for Research on Science and Technology, Stellenbosch University**

The slide presentations by Professor Kahn is available at the following website: [www.medicine.uct.ac.za/](http://www.medicine.uct.ac.za/)

According to the publication counts from the Thomson Reuters Web of Science ([http://thomsonreuters.com/products\\_services/science/science\\_products/a-z/web\\_of\\_science/](http://thomsonreuters.com/products_services/science/science_products/a-z/web_of_science/)), the number of publications in the category of ‘Medicine, general and internal’ had fallen from 2280 in 1990-1994 to 1556 in 2004-2008. It had also fallen from the category with the highest number of publications in South Africa in 1990-1994 to being second, being overtaken by ‘Plant sciences’ which had increased in publications over the two periods.

With regard to the institutional publication count ranking of the top five universities (University of Cape Town, University of Witwatersrand, University of Pretoria, Stellenbosch University and University of Kwazulu Natal) remained the same over the two periods with UCT having the highest number of publications for both periods.

Although the number of researchers in South Africa had increased in all categories from 1992 to 2007, that of the Business sector had increased more than twice the number of researchers in the Government (including the Science Councils) and Education sectors. Of note was that the total headcount of researchers of 30 000 had only reached that of Korea in 1982.

Professor Kahn pointed out that systems can only grow IF they are nurtured and developed.

In 1994 the number of graduates from the designated groups from the Human Sciences Research Council and Medical Research Council were 66 and 65 respectively out of a total of 346 and 150.

According to the Department of National Education (1993) and Department of Science and Technology (2004) the predominant age of female researchers in Higher Education Institutions was 45 years of which 25% were black; Science sector 35 years with 28% black; and Business sector 35 years with 21% black.

The number of graduates in the Natural Sciences in 2006 showed that the numbers of PhDs in the Health Care and Health Sciences rose from 70 in 1996 to 110 in 2006 (HEMIS Table 2.13, 2006).

The Ten Year Innovation Plan (2008) for 2018 shows that the number of Science, Engineering and Technology PhD graduates per year needs to increase from 561 in 2005 to 3000 and that of the number of full-time equivalent researchers needs to increase from 11 439 in 2005 to 20 000 in 2018 in order to transform South Africa to a knowledge-based economy.

The implications with this challenging Innovation Plan is that it has a western/environmental science bias similar to that of an advanced developed country such as Norway; the older universities will again dominate; there will have to be major investments in science by the state and private sector to achieve the objectives of the plan.

**“Implications of the ASSAF report on clinical research and related training” by Professor Wieland Gevers, Academy of Science of South Africa**

The 13-member Study Panel (largely academics) appointed by the council of ASSAf was tasked with identifying the barriers inhibiting clinical research in South Africa and making recommendations for the revitalization of clinical research that can be implemented by the Department of Health (DoH), Department of Science and Technology (DST), Department of Higher Education and Training (DHET), Department of Trade and Industry (DTI), Universities, Industry, Science Councils and other role players. The report was released in 2009 after two years of work.<sup>1</sup>

The findings of the study were that

- Clinical research is important because it can and will improve health outcomes by establishing the effects of health-care interventions and promoting and facilitating best-possible health-care practice;
- It is a crucial element in the education and training of health care professionals and the effective provision of appropriate health care (According to President Obama’s economic advisor, the former president of Harvard, Lawrence Summers, “Investment by a nation in research that leads to better health is the most cost-effective investment that any nation can make”);
- Revitalising clinical research is in the national interest and requires efficient and supportive management and encouragement at all levels.

The ASSAf Report on Clinical Research and Related Training made findings on several aspects including the state of the national culture of research, national research outputs, and the health research workforce. The

Reports recommends, among other measures, the establishment of a National Clinical Scholars Programme which may be achieved through efficient modular combinations of:

- expanding the intercalated-research-year model of selective training of motivated undergraduates (BSc Med) and having more clinicians participating in BSc Med Hons programmes;
- re-designing the MMed dissertation to provide training for large numbers of registrars in research;
- making possible concurrent and sequential PhD degrees for clinical under- and post-graduates, through widening of the necessary opportunities and support mechanisms, and providing a maximum of flexibility in funding possibilities and degree structures;
- ensuring that an adequate cadre of basic scientists exists to underpin the entire training system;
- also promoting training for biostatisticians and other supporting professions for clinical research at universities;
- funding learnerships for graduates in the research facilities of large multinational and national companies;
- developing and supporting a network of skilled mentors who can lead the development of young clinical researchers.

The full report of the ASSAF Consensus Report of Revitalising Clinical Research in South Africa and the related ASSAf PhD report are available at <http://www.assaf.org.za/evidence-based-reports/>

### **“Lessons from the oldest MD/PhD program in the USA” by Associate Professor Tawanda Gumbo, University of Texas Southwestern Medical School, Dallas, Texas, USA**

Professor Gumbo described several ‘phenotypes’ of clinical scientists he had experienced as a clinical scholar himself. Drs Joseph L. Goldstein and Michael S. Brown were clinicians who did a lot of basic science, Dr Alfred Gilman another medical physician who spent most of his time working in the laboratory, and Dr Seldin who spent most of his time in the clinic, but also ran a laboratory where most of the research was done by PhD students.

He classified clinical scientists into four types: type 1 is a clinician who does half clinical work and half basic laboratory research; type 2 is a clinician who spends all his time in designing and performing clinical research or trials; type 3 who is a clinician who does some small laboratory work and translates it into bedside management of patients; and type 4 who is a PhD from any discipline who focuses on clinical questions. He posed the question of where the envisaged clinical scholar being discussed today would fit into this classification.

He emphasized the importance of planning the funding of post-doctoral years as an integral part of a clinical scholars programme. This aspect is often missing in planning for clinical scholars. There is a clear model in the basic sciences: after a PhD one goes on to postdoctoral research for a few years learning to write grants before you go on to be your own person.

Professor Gumbo stressed the crucial role of basic sciences in a clinical scholars’ programme and that some of the courses should have an interdisciplinary component where medical doctors work together with PhD scientists to solve clinical problems. He maintained that any clinical scholars’ programme should include deliberate contact with basic scientists to foster relationships and encourage collaboration with basic science colleagues.

As the Academy has recognized the need for clinical scholars he considered the question of what they are going to be trained to do five or ten years down the line as the most important aspect of this workshop. Will they be involved in clinical trials, examining pathogenesis of disease, drug discovery, to teach at universities, to work in the pharmaceutical industry or to be better clinicians? He advocated for different levels at which clinical scholars are trained, namely, master’s and PhD, but queried whether there should be more levels.

One of the first things that has to be done is to train clinical scholars who are going to mentor the clinical scholars. The training of mentors is an essential aspect as one of the most important relationships is that between a supervisor/mentor and a PhD student. The mentor should be chosen at the beginning of the programme and it is frequently found that the clinical scholar follows the research direction of the mentor. Clear formal guidelines should be set out for the mentor and clinical scholar with regard to frequency of meetings, the expectations of the mentor and expectations of the clinical scholar.

A contentious issue that has to be addressed is who will fund the scholar? How many years will the clinical training be? How will the funding be provided in terms of regular clinical duties and time allocated to research? Funding is essential in order to attract applicants. Funding is also crucial for pilot projects which scholars should apply for personally providing them with their first grant application experience.

An important fact to consider is what incentive will there be to ensure that the scholars commit for the entire period and are not drawn into private practice after a great deal of money has already been invested in their

training. What measures and assurance need to be put in place so that the scholar will commit for the entire period? One of the ways of ensuring that clinical scholars, on completion of their training, continue in the field of clinical research is to provide them with training and experience in grant writing so that they are competent at writing and obtaining their own research grants. Initially they should have access to seeding money for their primary pilot projects. The application process and quality should be exactly the same as for public granting agencies; therefore they need specific training on writing grants for local funding, international public agencies and the pharmaceutical industry.

Professor Gumbo suggested that there are post are made available for the scholars once they have completed the program and that there is funding for a research project for two years to start them off on their own.

### **Panel discussion**

Due to the length of each presentation there was not much time available for discussion. Prof Eric Bateman, however, raised the point that one of the reasons for the apparent drop in publications from Groote Schuur Hospital was due to the fact that the policy changed and research was considered to be academic and so had to be put through UCT as Groote Schuur Hospital was considered a centre for services to be provided.

#### **Session 2: Funders plans and perspectives**

**Chair: Professor Bongani Mayosi**

#### **“What is the Discovery Foundation doing to increase the quality and quantity of PhDs in the clinical sciences?” by Dr Maurice Goodman, Trustee, Discovery Foundation**

Dr Goodman presented an overview of the Discovery Foundation which aimed at funding academic medicine and research and increasing the number of previously disadvantaged students who become medical specialists. The Foundation’s mission is to provide R100 million investment in training 300 medical specialists in research by 2016.

It has a targeted intervention to address challenges in our healthcare system which includes support for academic institutions to train clinicians in research and academic medicine focusing on HIV and AIDS, TB, cardiology and oncology.

Over R66 million has been invested in individuals and institutional awards over the past five years, the majority of which has gone towards funding academic fellowships including MMed and PhD research. Thirty-three PhDs have been funded from a variety of disciplines of which half of them have been for students from UCT and Groote Schuur Hospital.

#### **“What is the Department of Science and Technology doing to increase the quality and quantity of PhDs in the clinical sciences?” by Ms Glaudina Loots, Director: Health Innovation, DST**

The vision of the DST is to create a prosperous society through the coordination, development and management of the national system of innovation. The DST is concerned with the development of the innovative capacity, the enhancement of the knowledge-generation capacity, appropriate science and technology innovation and the human capital needs. All of these aspects of the work of DST are relevant to clinical research.

The DST works closely with the Department of Health (DoH) and those of the workshop participants who will attend the forthcoming National Health Research Summit will see that Health Innovation is being presented as one Health Research strategies that is being developed. Of specific interest are new therapeutics and drug delivery systems, vaccines, other biologicals, improved diagnostics and medical devices. Also under investigation are the social determinants of health including human health behaviours. These are closely linked to how well therapies are going to work. They are also investigating environmental determinants of health. One of the research facilities that is not currently being utilized is the Centre for High Performance Computing situated in Cape Town which is designed to support projects that require massive computing power for data storage and data analysis.

In order to address the dire need for clinical research DST has taken the first report of the ASSAf into consideration as one of the instruments of the DST. The panel worked on the first report together with the DST looking at specific strategies, areas of research priority and implementation plans. The outcomes of the UCT Clinical Scholars Programme Workshop will also be incorporated. Then a specific strategy will be placed on the table, discussed with the DoH and DHET and, finally, with the Treasury. Research gaps that require to be filled and the cost to implement a programme such as the MBChB/PhD will be considered.

Most of the budget for research and development presently goes to the basic sciences so that clinical research in the academic environment has shrunk to such an extent that it is in a crisis. Clinical research used to be the top area of research in South Africa and the DST aims to turn the situation around so that it once more becomes the top area of research.

One of the major problems is that clinical research is considered by most people to involve industry-initiated clinical trials only and research beyond this is not considered. Clinical trials have become a major money spinner in South Africa involving R2 billion per annum. People need to be made aware of other clinical research beyond commercial clinical trials. It is important for the DST and UCT Clinical Scholars Programme partners to plan together to see whether it is affordable for a young student to go into a PhD; have research chairs for clinical research and what policy changes are needed in order to implement the envisaged programme.

The DST strategic plan draft will first be open for discussion and then will be able to start to be implemented.

**“What is the South African Medical Research Council (MRC) doing to increase the quality and quantity of PhDs in the clinical sciences?” by Dr Niresh Bhagwandin, Executive Manager: Strategic Research Initiatives, MRC**

Dr Bhagwandin substituted for Professor Ali Dhansay (Acting President, MRC) who was unable to attend at short notice. He presented a list of specific funding categories available which lead to PhDs. These were targeted as being relevant for the Clinical Scholars Programme. Funding categories included local doctoral scholarships; research training scholarships for black scientists, research training scholarships for allied health professionals and nurses; local postdoctoral scholarships for students who have completed a doctoral degree to encourage PhDs to stay in the research field; post MBChB and BChD grants for medical and dental graduates who have completed internship and community service who register for a Masters or PhD in a specialist field or research area; a salary contribution for specialists under the age of 45 years to spend dedicated time to do research training towards a PhD or MMed; overseas doctoral scholarships for researchers who need to spend time with their supervisors abroad as part of their doctoral training; staff credentialing to allow fulltime historically disadvantaged academic staff to develop their credentials towards a PhD as a salary contribution if unpaid leave is necessary to do studies; research development grants for purposes of academic development for historically disadvantaged individuals in the areas of allied health or nursing who are registered for a PhD; travel grants for PhD candidates to present abstracts at international conferences; travel grants for short visits/courses to undertake courses or attend special skill courses which are not available at the usual station of work where the researcher is based.

A list of recipients for 2001 – 2010 was presented and it was evident that the number and funding level of awards made over this period has not increased. He commented that it was unfortunate that there are not many applications for these scholarships, but conceded that the modest level of funding may deter candidates who do not have access to top-up funds from their institutions.

The website of the MRC for information on the research scholarships available appears at:

<http://www.mrc.ac.za/researchdevelopment/opportunity.htm>

Dr Bhagwandin informed the workshop that one of the recommendations of the Report on Revitalising Clinical Researchers by the ASSAf was for the MRC to be the coordinating centre for clinical research which it welcomes. The Research and Development Committee of the Board has supported the initiative for clinical science research which will be a platform and that one of the important areas of this platform is to train clinicians and other people in clinical research.

**“What is the National Research Foundation (NRF) doing to increase the quality and quantity of PhDs in the clinical sciences?” by Dr Romilla Maharaj, Executive Director, Human and Institutional Capacity Development, NRF**

Dr Maharaj congratulated UCT on arranging the Workshop which has been needed for a long time. The question that has been circulating for over a decade is what does MRC fund and what does NRF fund? She stated that there is no conflict as they both fund different aspects of research although the same project might receive funding from both institutions for different aspects of the research project.

Dr Maharaj presented the mandate of the NRF: NRF Act, no. 23 of 1998 which states that its mandate is to “Promote and support research through funding, human resource development and the provision of core national research facilities in order to facilitate the creation of knowledge, innovation and development in all fields of science and technology, including indigenous knowledge and thereby to contribute to the improvement of the quality of life of all the people of the Republic”.

Health research is included in the NRF and includes clinical research, but excludes clinical trials. There are numerous funding mechanisms for clinical research across the directorates of the NRF: Knowledge Fields Development (KFD) directorate; Human Institutional Capacity Development (HICD); Applied Research and Innovation (ARI) directorate which contains THRIP and many researchers and clinical researchers have had THRIP grants; International Relations and Cooperation (IR&C) directorate which also offers opportunities for research funding health and clinical researchers.

Some instruments that are not being tapped into to the extent that they could be and the way the DST and NRF are approaching Treasury for funding is to look at the human capital development at three levels:

**Next Generation** which is for pre-doctoral projects. We need a collective effort to increase the number of PhDs, not just from the NRF and DST. There has been some modeling looking at additional supervisory capacity that will have to be developed to increase the number of PhDs. The NRF also has an Annual PhD Conference and will be going to have Regional PhD Conferences. These form one of the instruments the NRF uses to fund pre-doctoral students.

**Emerging Researchers** for postdoctoral emerging researchers who have yet to establish themselves as researchers. The *Thuthuka Programme* targets individuals who are already employed in an academic institution who, either need to get their PhD or, have their PhD and have not been able to establish themselves as researchers. The *Professional Development Programme* is DST-funded and is a salaried component rather than a bursary and the pre- and post-doctoral students are based at the Science Council or MRC or elsewhere if it is a clinical research programme. It is patient-oriented research which is not limited to medical doctors, but includes all health professionals. The *Emerging Researcher Network* is an electronic mechanism for networking and sharing, providing mentoring and support which researchers need. There are also *Postdoctoral Fellowships* and *Professional Development Programme* for postdoctoral students

**Established Researchers.** The South African Research Chairs Initiative has been used by many institutions to increase the supervisory capacity to develop more PhDs because it is difficult to do so with the present level of researchers.

One of the areas at which the NRF is looking at specifically is nursing research because of the low numbers of nurses who were successful in the NRF Rating Evaluation process. In that effort the KFD is looking specifically at intervention to drive nursing research.

#### **“What is the Netcare Physicians Partnership doing to increase the quality and quantity of PhDs in the clinical sciences?” by Dr Victor Litlhakanyane, Trustee, Physicians Partnership Trust**

Netcare Physician Partnership Trust, under the umbrella of the Health Partners for Life programme, established the Hamilton Naki Clinical Scholarship.<sup>2</sup> This is awarded to clinical specialists of outstanding academic ability who demonstrate a commitment to contribute to academic healthcare in South Africa and wish to pursue doctoral or post-doctoral research. They are funded to conduct full-time research either locally or abroad if their research needs to take place there. The selectors come from medical schools all over South Africa and there are many applications annually as opposed to other funders we have heard from today. The Fund started in 2007 and since then we have had a few successes to date with one doctor having completed a PhD at Oxford and is coming back to UCT to develop an academic career. Another doctor who is a psychiatrist did a PhD at Stellenbosch. A third did a PhD at UCT and a fourth student is from Johannesburg who is going to Canada to do his training. The scholarship only supports a few students as it costs a great deal over the years to support a candidate.

Dr Litlhakanyane mentioned the challenge with which they are faced regarding the length of time in years to get someone through medical studies and a PhD. In addition, many candidates lose their posts when they go overseas to complete their studies so they need support for a further period of one or two years on their return to SA to commence an independent academic career. If they go overseas for their training the scholarship has to cover their living costs too.

Another challenge is the limited number of posts to which these scholars can return to in SA on completion of their studies.

In order to address these problems we really need to develop partnerships and it is clear from this workshop that there is a great deal of willingness for people to share experiences and expertise.

### **Session 3: Some examples and proposals – what are the solutions? Chair: Associate Professor Arieh Katz, UCT**

#### **“Using the MMed degree as a springboard for the accelerated production of MDs/PhDs” by Professor Khaya Mfenyana, Dean, Faculty of Health Sciences, Walter Sisulu University, Mthatha**

Professor Mfenyana described the registration requirements for specialist training in South Africa. This comprised academic research and examination through a professional body such as the Colleges of Medicine of South Africa (CMSA) over a period of four or five years, depending on the discipline. When comparing the number credits required for a MMed (480) and a one-year's master's degree (180), the subsidy is the same making the MMed a financially non-viable university degree.

Training of medicine including specialization and a PhD in South Africa takes 15 – 17 years and accounts for 1540 – 1740 credits; whereas training in the humanities for masters and PhD takes 8 years and accounts for 1020 credits. He also compared 8 years (1020 credits) to obtain a PhD in Humanities with 12–14 years of the MMed (1180-1380 credits).

Prof Mfenyana proposed two solutions:

- MMed to be comprised of 2 streams: MMed by coursework (i.e., professional component of Parts I and II) and mini-dissertation of 60 credits taking a total of 12-14 years (the *status quo*); and MMed by full dissertation only of 180 credits at any stage after completion of MB ChB Degree and then to be able to register for PhD.
- To de-link the Fellowship from MMed and for the Fellowship to remain a professional qualification (Registrar Training that includes a Research Component of 60 credits); and the MMed Degree to be an academic qualification, namely, a Masters by Dissertation only (180 credits).

This would allow the universities to generate a subsidy for the MMed as a full Masters by Dissertation (180 credits) and PhDs could be produced at an accelerated rate compared to what is happening now. Other universities have dealt with this issue by creating discipline specific masters degree by dissertation (e.g., Msc in Medicine at UCT), and have left the MMed as a vehicle for a professional qualification (equivalent to the fellowship) and a mini-dissertation of 60 credits. The latter is approved by the HPCSA for purposes of specialist registration.

#### **“The Wits model for training clinician scientists” by Professor Yosuf Veriava, Former Professor and Head of Department of Medicine, University of the Witwatersrand**

Professor Veriava described the establishment of a Division of Academic Medicine as a vehicle for bringing Wits and other African clinical practitioners into a scholarly environment as a means of increasing the number of clinicians who complete a PhD and are qualified to teach and supervise research in an academic setting. The rationale for this development is based on the importance of clinical research as a means of revitalizing clinical research and developing the next generation of academic clinicians and regaining our place as producers of high quality research on important clinical issues. It also is a means of increasing the supervisory capacity of existing clinicians by developing teaching competence.

Specialists are recruited from the pool of postgraduates. They are relieved of service responsibilities through a two-year period of scholarship and participate in a departmental/divisional academic programme. They are granted unpaid leave from the service institution, without loss of benefits, to be able to participate in a structured formal PhD programme.

The Carnegie Fellowship Training Programme commenced in March 2011. Year 1 comprises courses and skills development in research methodology, laboratory and microscopy research techniques, protocol development, statistics, scientific writing, research ethics, reviewing scientific literature, small and large group teaching and assessment skills and research project management.

Courses for Year 2 comprise data analysis and statistics, writing skills, presentations and communication skills, teaching, grant writing, research and project management, personal academic development and academic networking.

During the first six months the fellows are required to complete a research protocol with postgraduate committee approval and ethics clearance. By the end of Year 2 the fellow is required to complete and submit a thesis or draft of a thesis with the final submission of a thesis by the end of Year 3.

There is a formal protocol for supervision and reporting. Supervisors and fellows meet monthly, the director meets with each fellow and supervisor bi-monthly, and the supervisor submits a written report to the director at six-monthly intervals which are then submitted to the Assistant Dean for Research.

The first four candidates have been selected out of a pool of 11 applicants and commenced in March 2011. All four fellows are satisfied with the programme and are optimistic about completion within the allocated time.

## **“A view from Nigeria” by Professor Adesola Ogunniyi, Professor of Neurology, University of Ibadan, Nigeria**

Professor Ogunniyi presented a brief sociodemographic overview of Nigeria which highlighted the high workload which doctors have (1 medical practitioner per 100,000 people) which partly explains why there is a low production of PhDs in the clinical sciences. Poverty is a large problem and the amount spent on health per capita is small. The number of researchers is less than that of South Africa (~18,000 vs ~40,000), for a Nigerian population that is three times that of South Africa. In 1981 approximately 25% of the publications in sub-Saharan Africa were from Nigeria, but that had fallen by 50% in 1995.

Challenges for clinical research in Nigeria are poor infrastructure, obsolete equipment, lack of continuous electricity and water supply. From the human perspective there is complacency, competition between people and lack of cooperation between the various sectors in health, competition from alternate health practitioners which interferes with research samples.

Most of the PhDs produced by the University of Ibadan are from the Arts, Agriculture, Forestry and Education, but very few from Medicine. Only 25% of the academic medical staff have PhDs, whereas in the basic sciences and public health there are far more.

What is being done to increase the number of PhDs?

The University is addressing this by giving the Postgraduate School more money to award scholarship schemes, teaching assistance schemes, purchasing of equipment for departments and multidisciplinary research grants.

The undergraduate curriculum has been developed to include an intercalated one similar to that of UCT and is called ‘Building bridges to produce tomorrow’s doctors today’. Medical students have the opportunity to branch out after third year to do PhD, or MPH degrees and then return at fourth year level to complete their MBChBs should they wish to do so.

The University College Hospital has proposed a clinical fellowship programme which, after the completion of residency, selected students, usually one per large department, can pursue MD or PhD degrees. They register with the University of Ibadan Postgraduate School and combine research with their clinical duties and achieve their degrees in three years. Hopefully this will be done through the proposed Institute of Advanced Clinical Research and Training, College of Medicine which Professor Ogunniyi is going to head from 1<sup>st</sup> August 2011.

Professor Ogunniyi emphasized the importance of the basic and applied sciences in clinical research.

## **“The UCT intercalated BSc(Med)(Hons)/MBChB/PhD programme” by Associate Professor Arie Katz, Division of Biochemistry, Department of Clinical Laboratory Sciences, UCT**

Professor Katz described the traditional course of medical students spending five or six years obtaining an MBChB degree before completing an internship and community service (in South Africa) and only then being able to continue with a PhD if they had not been engaged in family responsibilities or being attracted to private practice.

The UCT intercalated BSc(Med)(Hons)/MBChB/PhD programme is based on similar intercalated programmes in USA and Europe as outlined in the ASSAf Clinical Research Report.<sup>1</sup> However, in USA the programmes are longer than at UCT programme as the students have to first complete a first degree before being able to do medical studies.

It is not possible to obtain a BSc (Hons) at the end of four years as the new undergraduate programme comprises integrated spiraling courses and not stand-alone courses. Therefore, an additional course, over and above the courses for third year MBChB, has to be done at third year level before the students come out of the MBChB programme to complete an honours year. The additional course in Molecular Medicine is considered a major course and is meeting the Higher Education Qualification Framework (HEQF) and University’s credit needs for a BSc(Med)(Hons). The Molecular Medicine course provides medical students with knowledge and skills equivalent to a BSc student before they proceed with the honours course.

Students have to decide at the end of second year whether they wish to embark on the intercalated programme of the Molecular Medicine simultaneously with third year MBChB, come out of MBChB for fourth year to complete the Hons component, and then return to the MBChB course to complete fourth, fifth and sixth years. If students decide to continue with research following completion of the BSc(Med) (Hons), they may register for a master’s degree and will be able to upgrade it to a PhD as academically one cannot register for a PhD without a master’s. After that they can complete a PhD in three years and graduate with BSc(Med)(Hons)/PhD.

There will be a second option for students who graduate with an Hons. They will be able to complete their masters and PhD before continuing with the fourth, fifth and sixth years of the MBChB programme.

Should they not wish to continue with the intercalated component once they have their Hons they can simply rejoin the MBChB programme and graduate with a BSc(Hons)/MBChB. Students who start the MSc component and do not wish to pursue a PhD will be able to graduate with a MSc/MBChB.

There will need to be a budget specifically for mentoring to build the capacity of clinicians supervising research projects.

The first five students were accepted for 2011. It was decided to start with a small number for the first year of the Molecular Medicine course. In 2012, they will register for the Hons component and leave the MBChB programme for one year and a new intake of students for Molecular Medicine will take place.

**“Challenges for introducing the UCT PhD programme for Audiology and Speech Pathology, Nursing, Occupational Therapy, Physiotherapy, Nutrition and Dietetics, and other four-year professional clinical degrees” by Dr Merle Futter, Programme Developer and Coordinator, UCT Clinical Scholars Programme**

The low number of PhD graduates in the allied health sciences (AHS) is not unique to UCT. The problem exists at all universities offering these programmes in South Africa and internationally in the UK, USA, Australia, Canada and New Zealand. The reasons for the low rate of PhDs from the AHS are as follows:

- Funding. Internationally there is difficulty in obtain funding for research in the AHS. By nature of the professions clinical practice does not involve drugs or expensive instruments or equipment so there are no industries from which to source funding.
- State posts offer no financial recognition for or incentives to obtain postgraduate qualifications. Salaries remain at the same level regardless of the clinicians academic achievements. There are those clinicians who, for intellectual stimulation, return to do their masters, but, in order to finance the degree it usually has to be done part-time and the vision is not to continue to do a PhD, but simply to graduate with a master’s degree.
- Salaries are low compared to MBChB graduates so to repay student loans and commit to postgraduate research is not a viable option, even if they wish to do so. Their first priority is to repay their undergraduate loans and then get involved in raising families and domestic responsibilities so they are ultimately lost to postgraduate degrees.
- Capacity of staff. The academic and clinical staff are fully committed to undergraduate teaching, clinical supervision and supervising undergraduate and postgraduate research projects. Several of the disciplines also have structured masters by coursework which require teaching and research supervision. None of the disciplines presently has the capacity to develop the coursework required for a sequential PhD.

The UCT Clinical Scholars Programme intends to work with academic leaders in the affected disciplines to develop a sequential PhD programme that takes advantages of a number of clinical research courses and degrees (such as the MPH in Clinical Research) that already exist at UCT.

**“The MBChB/MPH and postgraduate MPH programmes as a mechanism to increase the quality and quantity of clinician scientists” by Associate Professor Landon Myer, School of Public Health and Family Medicine, University of Cape Town**

Professor Myer described the role of the public health sciences in strengthening clinical research based on the assumptions that there is a need to strengthen clinical research capacity in South Africa and that there is a growing emphasis on research needs for policies and populations and translational research.

The School of Public Health has two important roles to play in strengthening clinical research: providing content on perspective on population health issues beyond the laboratory or health institute; and training in research methods in health sciences.

The Masters in Public Health at UCT has been a part-time degree at UCT since 1999. There are various streams and students in the Clinical Research stream make up 10% of the MPH. The annual intake is capped at 50 with 70% of all MPH students coming from non-clinical backgrounds of BA, BSc and the allied health sciences. It serves as an entry point of coursework for PhD.

The MPH in Clinical Research is like all MPH degrees. It is part-time and is structured with 2/3<sup>rd</sup> as coursework and 1/3<sup>rd</sup> research which is written up in the form of a mini-dissertation which is equivalent to a publishable paper or published paper. As with other masters by coursework programmes there is a bottleneck between completion of the coursework and the mini-dissertation.

The MPH is a platform for strengthening clinical research by focusing skills on advanced research methods for patient-oriented research which targets junior clinicians to mid-career professionals including the allied health sciences who wish to develop a clinical research profile.

Lessons learned to date with the MPH in Clinical Research programme are: A certain amount of specific advanced training in research methods is an important part of a PhD programme leading to a clinical research career. Students doing a PhD by dissertation only also need input of appropriate coursework. Students in MPH Clinical Research foster/enable other research in the clinical department in which they are working. Part-time study is however challenging for full-time clinicians. Most of the successful students have the support of their HODs and colleagues.

The future plan of a combined MBChB/MPH has had a precedent of MBChB students completing an MPH. It is a very sound foundation for a PhD. Alternate methods of teaching research methods towards a PhD include short courses, intensive one-year masters full-time and an online/distance- based learning platform, all of which have limitations and difficulties in putting in to operation.

**“What are the ways in which the HPCSA could streamline the registration process for clinician scientists?” by Professor Letitia Moja, Chairperson, Medical and Dental Professions Board, Health Professions Council of South Africa (HPCSA)**

The HPCSA is a statutory body established under the Health Professions Act 56 of 1974. It has 12 professional boards operating under its auspices. The Medical and Dental Board regulates the education, training and professional activities doctors, dentists and medical scientists.

The vision of the HPCSA is quality healthcare standards for all and its functions are to protect the public and to guide the professions. It is not there only to act punitively against practitioners, but has a strong role to guide the professions.

It guides the professions by ensuring the training of competent practitioners; designating professional status as determined by the training, inclusive of right to practice the profession; establishing the relevant registers of qualifications; and disseminating information to guide the practitioners. By guiding the professions in this way it protects the public.

One of the tools of protecting the public is to have a register. Registration categories of the Medical and Dental Professions Board are: Student; Intern; General Practice which includes community service, public service, and independent practice; and Specialists and Subspecialists

The registers are Board specific such as the Medical and Dental professions Board. Therefore, an individual can only register with one board and this can be a challenge when working in teams and will be so for the envisaged clinician scientist. The register is determined by the needs and advised by the training with regards to entry requirements, curriculum, training duration and scope of practice.

The options for a clinician scientist are:

1. A new register to set the entry and training requirements; determine the level – masters, PhD, generalist or specialist; applying for a new register; and establishing training sites. The challenges for this option are that there is a lengthy and protracted process to open a register and it is limited to a board. It is doable, but we need to get going now due to the length of the process. The board will need to include all clinician scientists, but exclude all other clinical health practitioners.
2. Registration for an additional qualification to set the entry and training requirements; develop training sites; apply for recognition by the individual with the training or the educational institution to the HPCSA; and is used as initial phase to a register. One needs a critical mass of people in that particular field before the register can be recognised.

Most registers are started by the professional bodies or groupings who decide whether the qualification will need a new register or the qualification will be registered as an additional qualification.

The challenge for an intercalated degree such as the MBChB/PhD is that there needs to be a broader clinical scientist definition which includes other clinical health professions. The naming of the category is going to be critical. For example, the Medical Scientist classification has been established and is based on a BSc and is determined by the training.

The duration of medical specialist training is 14 – 16 years and for clinician scientists 19 years. It is timeous for UCT to start looking at an intercalated degree which will shorten this time for clinician scientists. We need determination by various stakeholders to recognise the need this category of professionals. We need to set the training requirements and scope of practice. This will be determined by the training institutions with the HPCSA playing a key regulatory role in setting minimum standards and facilitating registration.

**Session 4: Consensus on the way forward – what is to be done in order to increase the quality and quantity of clinical PhDs?**

**Chair: Professor Bongani Mayosi**

**“Portability between institutions: the HEQF perspective” by Ms Judy Favish, Director: Institutional Planning Department, University of Cape Town**

Ms Favish stated that she was going to talk about the possibilities for inter-institutional mobility of students for course work.

South Africa has, based on other models in the world, developed a common standard of national qualifications which is called the higher education qualifications framework (HEQF). The main objectives of the HEQF are to facilitate two things: the articulation of various levels within a qualification from one level to the other and, secondly, in the context of the intercalated degree, to facilitate mobility between and within institutions that are governed by the same qualifications framework. It does that by providing a common architecture which theoretically provides the basis for consistency across the sector and for mobility. By outlining the different qualification types that are recognised within that country a common set of purposes associated with each qualification type and a basic set of minimum requirements for access into those qualifications and for determining whether those qualifications comply with minimum exit levels standards. The reasons for saying ‘theoretically’ is that the architecture itself lays the basis for consistency across the sector and because it was outlined for the purpose of different qualifications. Theoretically, a qualification such as an Honours degree that is offered in one institution should be similar to an Honours qualifications in another institution because they would have had to adhere to the same minimum standards. So the Qualifications Framework provides the process of mobility between institutions by virtue of the common purposes and the common requirements for access in and requirements for determining the exit levels.

Something particular to our qualifications framework which may or may not be relevant are the provisions in the framework for credit accumulation and transfer. One of the purposes of having the qualifications framework is so that the student can accumulate credits and move from one institution to another and one would expect there to be provisions with regard to the accumulation of credits. The HEQF states that the Ministry of Education intends to undertake systematic work on the development of a National Higher Education Credit Accumulation Transfer Scheme (CATS). That work has commenced, but we do not yet have a document that we can use. The only stipulation, with regard to credit accumulation, is that whilst the Ministry is still working on this CATS, in the interim a maximum of 50% credits of a completed qualification may be transferred to another qualification and provided that no more than 50% of the credits required for the other qualification have been used for the completed qualification. That is the only restriction on mobility. Theoretically there is nothing stopping people from moving from one institution to another. The HEQF specifically encourages that.

This forms the basis for the proposal for medical students from other universities (such as the University of Limpopo or Walter Sisulu University) to be selected for the one year intercalated Bsc (Med) (Hons) course, and graduate from their universities with Bsc (Med) (Hons) / MBChB.

**Session 4: Consensus on the way forward – what is to be done in order to increase the quality and quantity of clinical PhDs?**

**Chair: Professor Bongani Mayosi**

**“An envisaged model for the PhD Clinical Scholars Programme for a 4-year professional degree” by Dr Merle Futter, University of Cape Town**

The Allied Health Sciences (AHS) Clinical Scholars programme is not as advanced as the intercalated MBChB/PhD one as it has only been in the process of being developed for two months.

The envisaged programme will be a sequential PhD programme following immediately after the completion of the professional degree. It cannot be intercalated like the MBChB/PhD as students in the AHS start clinical practice from the first year and this cannot be interrupted.

This programme is different from the other coursework master’s programmes offered in the allied health sciences disciplines as the students registering will, from the outset, be registering for their PhD.

The envisaged model is based on the assumptions:

- that there will be scholarship funding for the 4-year postgraduate component
- it will not replace or compromise existing masters’ programmes

The master’s component will comprise 50% coursework and 50% research dissertation. The dissertation will be upgradeable to a PhD. Should the student be obliged to leave after the coursework component he/she will graduate with a masters.

It will share the existing Clinical Research Methods Course Convened by the Department of Medicine and share the M(Med) Part 1 courses already offered to the registrars by the School of Public Health and Family Medicine.

The advantages: it offers an additional career pathway for AHS disciplines where job opportunities in the state services are often limited; and it is a practical means of increasing the PhD in clinical research output with minimal input from the AHS by sharing existing courses and will only require supervision of the dissertations by AHS staff.

### **“Challenges of the implementation of the UCT intercalated BSc (Med)(Hons)/MBChB/PhD programme” by Associate Professor Arie Katz, University of Cape Town**

Professor Katz provided the different options for the intercalated BSc (Med)(Hons)/MBChB/PhD programmes.

The MBChB/BSc(Med)Hons requires a choice made at the end of second year for the top 5-10% students as to whether they wish to follow a clinical research format or not. To become part of the programme they have to complete the Molecular Medicine course in addition to the regular third year courses. In fourth year they come out of the MBChB programme and do one year of honours. Then they return to the MBChB programme for years 4, 5 and 6.

Should the student wish to continue with the MBChB/PhD programme after the honours year, there are two possibilities. In the first one the PhD is completed in three years immediately after the honours year and then the student returns to the MBChB programme for years 4, 5, and 6. For the second option the student does the 3-year PhD after completion of the intercalated BSc(Hons)/MBChB.

Criteria for selection of eligible students are academic achievement and clinical research interest. Students have to achieve an average of 70% for all courses and a subminimum of 60% for the first two years. The challenge is to know how to select students at such an early stage of their programme when many of them can only show their true potential in later years, but still have a great interest in clinical research.

Another challenge is to know what the capacity is for the programme which is dependent on the teaching capacity and funding. At present the Molecular Medicine course in 3<sup>rd</sup> year has only 5 students, but can accommodate many more. The BSc(Med)Hons can accommodate several and the PhD several with the present staff capacity. The question is whether to open the Molecular Medicine course to more students from the MBChB programme who do not meet the honours criteria. They will not be able to proceed with honours, but will develop thorough knowledge and skills in Molecular Medicine.

Intercalated BSc(Med)(Hons)/MBChB/PhD programme: In principle the intercalated programme is the most sustainable and efficient route to produce clinician/scientists that are acutely needed in South Africa. However, intercalated degrees require funding – Fellowships. Students commit their time and the establishment should provide fellowships. The programme requires Fellowships to cover the Molecular Medicine course tuition in year 3; BSc(Med)Hons tuition and stipend to cover living expenses; and PhD tuition and living expenses for 3 years. This route is the most cost-effective. The value of a fellowship for an MBChB student doing the entire intercalated programme will be equivalent to funding for one year of a Fellowship currently awarded to a clinician doing a PhD.

There are several options that need to be considered to shorten the time to independent registration for medical students who pursue intercalated research degrees:

- Reduced time of “Internship” from two years to one year;
- Instead of “Community Service” allow graduates of this programme to do 1 year research;
- Reduced time for specialization: 3 years instead of 4.

What about research degrees to qualified clinicians? We can capitalize on the research component of the MMed degree in order to attract registrars to undertake laboratory-based research projects. As part of Core Facility for Clinical Research Innovation and Training (C-CRIT) it may be possible to create a Laboratory Techniques course for registrars interested in undertaking laboratory based research projects and engage primarily with the Institute of Infectious Disease and Molecular Medicine (IIDMM) to offer and supervise MMed research projects. This can act as spring board to undertake a PhD leading to more interaction between clinicians and basic scientists.

### **“Governance, Planning, Funding” by Professor Bongani Mayosi, University of Cape Town**

Prof Mayosi explained that the structure of the UCT Clinical Scholars Programme comprises a Steering Committee which determines policy and the structure of the programmes in which we are engaged. It is made up of the original group of founding members who applied for funding from UCT from a Strategic Award from The Vice-Chancellor (see list under Acknowledgements). The UCT applicants are the Department of

Medicine; Divisions of Audiology and Speech-Language Pathology, Nursing, Nutrition and Dietetics, Occupation Therapy and Physiotherapy; Associate Professor Harsha Kathard, School of Health and Rehabilitation Sciences; Associate Professor Arieh Katz from Clinical Laboratory Sciences; Associate Professor Landon Myer from the School of Public Health and Family Medicine; Professor Heather Zar, Department of Child and Adolescent Health; and Professor Dan Stein from the Department of Psychiatry. It is a broad-based group that is representative of the basic sciences, clinical sciences and the population sciences at UCT. The external partners are Kigali Health Institute (represented today by Ms Constance Katsinde); Professor Letitia Moja and Professor Errol Holland from the MEDUNSA Campus of the University of Limpopo; Professor Khaya Mfenyana from Walter Sisulu University; and Professor Adesola Ogunniyi from University of Ibadan, Nigeria.

We are busy developing this programme as an experiment and are hoping that at the end of this workshop we can have more members such as Professor Tahir Pillay from the University of KwaZulu-Natal as programme partners.

The Steering Committee is large and the operations control needs to have a few people to get things done. The Operations Committee to do this consists of three people: Professor Bongani Mayosi, Associate Professor Arieh Katz and Dr Merle Futter who is the programme coordinator. We meet regularly every month and try to report to the Steering Committee about the work that we do.

We are seeking funding to develop the programme. We did receive 'seed funding' from the Vice-Chancellor for four years and hoping that other institutions will find resources from within because it is important that before people can invest in what they do they have to invest in their own project so institutions will have to invest in this. One of the major aspects to come out of this workshop will be to distill all the contributions, put them onto paper and ultimately into a funding proposal so that this programme can be a programme that runs from the medium to long-term, which seeks to change policy, to change curricula, seeks to ensure that we develop this Clinical Scholars Programme and when we come back here in 2020 we can talk a different story.

There is a need for a place where there can be interdisciplinary clinical science meetings that are of high quality and that take us forward. So you will be invited to another workshop which might have a different name, whereby we can display what all the PhDs are doing. We can talk about developing this programme and really have a locus for clinical science in Africa.

#### **“Closing address” by Professor Sue Kidson, Deputy Dean, Faculty of Health Sciences, University of Cape Town**

Professor Kidson thanked all the colleagues who had attended the workshop and commented that it was critical that everybody was included as UCT cannot do this alone. Some of the institutions are even better placed to mount some of the programmes we are suggesting here that have been the key bottle-necks and which offer opportunities that will start to open the door for the future.

We need to look at this as an opportunity now because we know the Minister of Health wants all medical schools to increase their intake. Why not match these things? For example, if we are going to increase the student body by 10% we want to broaden the opportunity for the type of student that has been mentioned. Maybe we have to look creatively at our curricula which are spiral-designed curricula and ask ourselves whether we really are filled to capacity in 3<sup>rd</sup> year, are we really maximum in 1<sup>st</sup> year, or are we going to allow another stream to develop in that spiral structure such as a double helix that allows us to select, not on entry, but later on in the programme.

The honours level seems to be the bottle-neck in the pathway to PhD. Instead of the undergraduate, Hons and PhD numbers looking like an hourglass what one should see is a pyramid shape. The hourglass waist is very small and that depicts the honours level. We should double our honours numbers immediately and so must other programmes. Other universities have a lot of capacity in the honours programmes. Honours programmes can be mixed and matched and can be shared. In order to do this we need funding, not only for bursaries for the students, but to run the expanded programmes. This is particularly for one-on-one training which is needed to train a scientist and honours is where it happens. One needs that individual time and those supervisors need to be incentivised by giving them some funds to run these projects which might not be publishable.

And then, lastly, the staff capacity is a big issue. But we do have basic scientists at the IIDMM and other areas at UCT and there is every reason to believe we should be using these people more to supervise our honours and junior MMed. We should be giving mentoring to those staff members and give those departments, who do not have a culture of research, help to train and mentor the staff that are going to have to be picking up the MMed projects.

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## Acknowledgements

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### UCT Partners:

1. Professor Bongani M Mayosi, Head: Department of Medicine, School of Adult Clinical Medicine
2. Associate Professor Sinegugu Duma, Head: Division of Nursing, School of Health and Rehabilitation Sciences
3. Professor Jennifer Jelsma, Head: Division of Physiotherapy, School of Health and Rehabilitation Sciences
4. Associate Professor Harsha Kathard, Director: School of Health and Rehabilitation Sciences
5. Associate Professor Arie Katz, Division of Biochemistry, Department of Clinical Laboratory Sciences and the Institute of Infectious Diseases and Molecular Medicine and Convenor: Bsc Med Honours Programme
6. Associate Professor Landon Myer, School of Public Health and Family Medicine and Convenor: MPH Clinical Research Programme
7. Professor Dan Stein, Head: Department of Psychiatry and Child Health, School of Adult Clinical Medicine
8. Professor Heather Zar, Head: Department of Child and Adolescent Health, School of Child and Adolescent Health

### External Partners:

1. Professor Letticia Moja, Campus Principal, MEDUNSA, University of Limpopo
2. Professor Khaya Mfenyana, Dean, Faculty of Health Sciences, Walter Sisulu University
3. Ms Jean Kagwiza, Head, Department of Physiotherapy, Kigali Health Institute, Rwanda [Letter of support attached]
4. Professor Adesola Ogunniyi, Head, Department of Neurology, University of Ibadan, Nigeria [Mellon Visiting Scholar, Department of Medicine, 2009/10]

## Acronyms

ARI: Applied Research and Innovation  
ASSAF: Academy of Science of South Africa  
CAPRISA: Centre for the AIDS Programme of Research in South Africa  
CATS: Credit Accumulation Transfer Scheme  
CCRIT: Centre for Clinical Research, Innovation and Translation  
CESM: Classification of Subject Matter  
DET: Department of Education and Technology  
DHET: Department of Higher Education and Training  
DNE: Deterministic Networks  
DOH: Department of Health  
DST: Department of Science and Technology  
DTI: Department of Trade and Industry  
HDI: Human Development Index

HEI: Higher Education Institutes  
HEMIS: Higher Education Information Management System  
HEQF: Higher Education Qualifications Framework  
HICD: Human Institutional Capacity Development  
HPCSA: Health Professions Council of South Africa  
HQF: Higher Qualifications Framework  
IIDM: Institution of Infectious Diseases and Molecular Medicine  
IR&C: International Relations and Cooperation  
KFD: Knowledge Fields Development  
MEPPI: Medical Education Partnership Initiative  
MPH: Master in Public Health  
MRC: Medical Research Council  
NRF: National Research Funding  
R&D: Research and Development  
SAMJ: South African Medical Journal  
SET: Science, Engineering and Technology  
SRI: Strategic Research Initiatives  
THRIP: The Technology and Human Resources for Industry Programme  
UCT: University of Cape Town  
UCT: University of Cape Town  
UKZN: University of Kwazulu Natal  
WITS: University of Witwatersrand