



CDIA

Annual Report

2014





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# DIRECTOR'S REPORT

On behalf of CDIA, I am pleased to introduce the annual report for 2014. The fifth annual report provides an opportunity to review the progress the CDIA network has made during its first five years of existence and highlights our activities for 2014, the final year of the funding cycle that enabled our founding and gives an overview of our future plans.



**W**hen CDIA was launched in 2009 as one of 11 Centres of Excellence in lower- and middle-income countries, funded through the National Heart, Lung and Blood Institute - UnitedHealth Group Global Centres of Excellence in Chronic Diseases Programme (NHLBI/UHG), the membership was small. It consisted of academics from the major universities in Cape Town, the South African Medical Research Council and had single members from Harvard University and the Hindu Mandal Hospital, Tanzania. There were also close ties to the health services nationally and in the Western Cape. CDIA's vision was lofty – to reduce the impact of non-communicable diseases (NCDs) and their risk factors in Africa – in terms of its mission to serve as a collaborating research network for the development, evaluation and dissemination of methods and programmes to prevent NCDs; improving the quality of care for people with these diseases; and mitigating their risk factors. In addition, a further objective was to build research capacity.

Thanks to the high standard of work undertaken by our members, collaborators, fieldworkers and support staff over the past five years, we have achieved many of our initial research objectives,

contributed to building research capacity and impacted positively on policy. Our research has focused on the development and evaluation of tools and materials aimed at enabling community- and facility-based health workers to deliver good quality care for people with NCDs and build interventions that improve adherence and prevent associated lifestyle risk factors. These activities have been carried out within the goal of an integrated primary care model for NCDs, in which there is a seamless provision of care of patients between the primary level community health centre and the community itself.

In short, as described in more detail in the reports of the individual projects to follow, at the level of the community we have demonstrated inadequate current training and support of community health workers in NCD care. We have developed and validated a non-laboratory total cardiovascular risk factor assessment tool using South African data sets and have subsequently demonstrated that community health workers can be effectively trained to use it, allowing them to appropriately identify people within a community setting who may benefit from referral to primary level clinics for preventive healthcare. This was demonstrated in four countries: Bangladesh, South Africa, Guatemala and Mexico. Notably, we have shown that the use of mobile phones can simplify the training and functions of community health workers and that such screening is cost effective; however, this requires a well-functioning linkage between community health workers and the primary care facilities.

At the level of the primary healthcare facility, we have examined the effect of 'Primary Care 101' (PC101), a set of evidence-based, carefully designed guidelines that cover all the conditions likely to be seen among adults in primary care clinics in South Africa. These guidelines have been widely implemented by the Department of Health by means of a train-the-trainer programme and are facilitated by expanded prescribing practices for nurses. Our pragmatic randomised trial evaluated the impact of the guidelines on treatment intensification for patients with NCDs in primary care clinics in the Eden and Overberg districts of the Western Cape. Further, we have conducted a pragmatic trial of a group diabetes education programme, delivered by non-professionally educated health promoters trained in brief motivational interviewing techniques. We have developed lifestyle modification self-help materials for patients and a training programme for primary healthcare providers in brief behaviour change counselling that is currently being evaluated.

Our group, in collaboration with researchers from Oxford University, has embraced the use of mobile technology and conducted a trial to evaluate the delivery of text message (SMS) support to patients with hypertension to promote adherence to treatment. Finally, in the past year, the group has developed a cardiovascular prevention and management economic impact model based on South African data that has already been used in cost-effectiveness analyses of screening and intervention strategies.

Yet many unanswered questions remain; in particular, we have not evaluated the implementation of the integrated model of care, in which the individual components tested thus far have been combined. Another issue is that our research, with one exception, has been limited to the Western Cape Province of South Africa; consequently, its applicability in different settings still needs to be researched. For CDIA to live up to its vision, it is essential that future research moves beyond the province into the rest of South Africa and sub-Saharan Africa, and that the membership base be broadened. However, some advances have been made in this regard. The network now includes three other South African universities in the northern part of the country (Pretoria, North-West and Wits), as well as universities in Botswana, Kenya, Malawi and Mozambique.

Collaboration has also been initiated with various international NCD researchers and in addition, the award of new grants will see CDIA research expand into new settings. However, this aspect requires much more attention in the future. In 2014, we submitted a number of applications in response to the growing number of international and national calls for proposals for NCD-related research projects. We were successful with three of the five proposals submitted to The Global Alliance for Chronic Diseases call for applications, aimed at funding projects that would generate new knowledge on interventions relating to the prevention and treatment of type 2 diabetes in low- and middle-income countries, and in indigenous populations in Canada and Australia. Our new

funders are the European Union, UK Medical Research Council (MRC) and the Canadian Institute for Health Research and International Development Research Centre (IDRC), for periods of four to five years. As a result, CDIA's project work will now extend to Soweto in Gauteng (two separate projects), Malawi, Uganda and Sweden. We were also pleased to be awarded a one-year grant from the Discovery Fund in South Africa. This grant is solely to support the work of the directorate and is thus essential to the sustainability of CDIA.

The outcome of an application to the German Federal Ministry of Education and Research is still outstanding and will only be announced in mid-2015. CDIA has continued to build capacity by connecting members and postgraduate students across institutions and by linking people who have not previously collaborated with each other. To date, three students have graduated and 13 PhD and Master's students are currently working on CDIA projects. Furthermore, we anticipate that we will be in a position to recruit a new group of PhD students in the next year, once the newly funded projects get underway.

A large group of CDIA researchers and postgraduate students attended the final NHLBI/UHG steering committee meeting in April 2014 in Washington. All 11 centres presented the results of the work they had undertaken under the auspices of the programme and once again, the students' poster presentation session was a highlight. Over the past five years, the six monthly steering committee meetings have provided excellent opportunities to engage with researchers from other groups and forge new collaborations. Naturally, there

is a sense of disappointment at the lack of ongoing funding opportunities from NHLBI for the highly successful Global Centres of Excellence in Chronic Diseases Programme, but each centre has actively sought new funding to ensure its continued existence. The meeting concluded with the birth of GRANDSOUTH, a new network of the 11 Centres of Excellence based in low- and middle-income countries. The overarching goal of GRANDSOUTH is to serve as a leader in the implementation of innovative research approaches and strategies in identifying, understanding and overcoming barriers to the adoption, adaptation, integration, scale-up and sustainability of evidence-based interventions and policies to combat NCDs, both at local and global levels.

We are pleased to report that the research conducted by CDIA continues to impact positively on health policies in South Africa and other African countries. The notable successes have been described in earlier annual reports, but it is important to highlight the recent global interest shown in PC101 and the next version of PACK (Practical Approach to Care Kit). As a result, the work of CDIA and the UCT Knowledge Translation Unit, under the leadership of Lara Fairall, may well have changed primary healthcare delivery in multiple countries.

Once again, we would like to acknowledge the guidance and oversight of the Governing Board under the chairmanship of Professor Jimmy Volminck, Dean of the Faculty of Medicine and Health Sciences at Stellenbosch University. The management committee has played an important role in supporting the directorate and providing a regular review of our

projects and activities. We would like to thank the staff in the directorate: Carmelita Sylvester, Susan Botha and Chantal Stuart for their administrative support which has enabled us to meet the reporting requirements of our funders, deadlines for the grant submissions and work in the field. We say farewell to Sue Botha, who has reached the organisation's mandatory retirement age and wish her a rewarding and fulfilling retirement. Finally, I would like to acknowledge the support of Krisela Steyn, the associate director, who is so integral to CDIA activities and functioning.

We look forward to a future in which we grow the active membership of CDIA, the reach and scope of our research, the numbers of new committed NCD researchers, sustain our engagement with policymakers and make further contributions to improving the lives of people with chronic diseases.

*Professor Naomi Levitt*  
*CDIA Director*

# CDIA DIRECTORATE

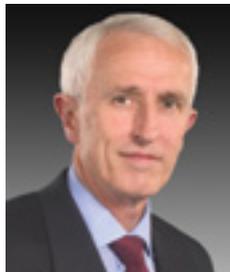
Carmen Delpont, Krisela Steyn, Chantal Stuart, Naomi Levitt, Liezel Fisher, Susan Botha, Carmelita Sylvester



# MANAGEMENT COMMITTEE



*Prof. Naomi Levitt  
University of Cape Town*



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*Dr Tom Gaziano  
Harvard University*

# CONCLUSION OF PROJECTS CONDUCTED DURING CDIA'S FIRST FIVE-YEAR CYCLE OF FUNDING

In 2014, CDIA network members were involved in data analyses and in the preparation of manuscripts for submission to peer-reviewed indexed journals on the initially funded projects. Feedback from the earliest project was published in the 2013 CDIA annual report. The network members frequently interacted with policymakers, NGOs or academic institutions, in which the findings of the research projects could be implemented. The progress and contributions of these projects are briefly summarised as follows.



## Pragmatic cluster randomised controlled trial of a guideline-based intervention to improve the primary care of non-communicable diseases in the Eden and Overberg districts of the Western Cape

**Research team:** Lara Fairall (photo below), Naomi Levitt, Max Bachmann, Thomas Gaziano, Eric Bateman, Krisela Steyn, Carl Lombard, Merrick Zwarenstein, Beverly Draper, Ruth Cornick, Alan Bryer, Crick Lund and Debbie Bradshaw

**PhD student:** Naomi Folb

### BACKGROUND

The objective of this trial was to test the effectiveness of a guideline-based training programme (Primary Care 101) for nurses on the processes and outcomes of NCD care across four priority conditions: hypertension, diabetes, chronic respiratory disease and depression.



### PROGRESS

The trial fieldwork was completed in early 2013. This included the collection of baseline data in 2011 from 4 393 patients who were interviewed at 38 community health centres. One hundred and eight nurses were trained in the use of PC101 in the intervention clinics in 2012. Patients were re-interviewed approximately 14 months after their baseline measurement. A 90% follow-up rate was achieved. The major progress for 2014 was in the analysis of the data and the preparation of manuscripts. The baseline data showed high rates of co-morbidity of common chronic conditions. For example, approximately 50% of chronic disease patients had depressive symptoms. Baseline data also pointed to the under-treatment and under-diagnosis of chronic diseases.

The main findings showed that treatment intensification rates were high among patients with hypertension and diabetes, but that these were similar between the intervention and control groups. Treatment intensification for chronic respiratory disease and case detection of depression were also similar between the two groups. However, the subgroup of moderately uncontrolled diabetic patients (baseline HbA1c between 7% and 10%) in the intervention group had significantly higher rates of treatment intensification (Wald  $p=0.0001$ ). A qualitative review indicated that the PC101 programme has been well received by nurses. A baseline paper describing the multi-morbidity, control and treatment of NCDs in the whole trial

## Project 1

cohort has been accepted for publication in the *South African Medical Journal (SAMJ)*. Two further papers have been submitted for publication: a paper investigating the socio-economic predictors and consequences of depression and a paper on the outcome of the trial.

The results of this study have been widely implemented, both nationally and internationally. The research team has been engaged by the Western Cape Department of Health to update PC101 on an annual basis. In the Western Cape, the guidelines have been updated, expanded, named the Practical Approach to Care Kit (PACK) and are being rolled out throughout the province. PC101 has also been adopted by the national Department of Health of South Africa for nationwide rollout in primary care facilities. Discussions are underway to ensure that the training methods adopted in the trial are used throughout the country. Global interest in PACK has increased over the past year and active engagement with key stakeholders in several countries is underway. PACK has been translated into Portuguese and is being implemented as a pilot project in Florianopolis, Brazil, for use in municipal clinics.

A further development of PACK is a formal collaboration with the British Medical Journal (BMJ) Evidence Centre (a part of BMJ Publishing) to provide a continuously updated evidence base for recommendations in the document. An attempt is being made to link each decision node with electronically accessible evidence and the

relevant WHO policies and recommendations. This linkage forms part of an international version of PACK (PACK Global). A further innovation is the creation of a global template to facilitate more rapid uptake of PACK Global in other countries, through a guided localisation approach that develops expertise within the recipient country for the ongoing use of PACK. This development is being funded by a philanthropic grant to the UCT Lung Institute. Lastly, the development of a new guideline-based training programme for use with children (PACK Child) has commenced.

**Research team:** Thomas Gaziano, Krisela Steyn, Debbie Bradshaw, Ankur Panday, Lara Fairall and Naomi Levitt

### BACKGROUND

The overall objective of this study is to develop and validate new and cost-effective non-laboratory-based screening tools for cardiovascular risk prediction in low-resource settings to obviate the high cost of blood assays associated with such screening. Three projects are being conducted to validate this non-laboratory total CVD risk score.

### PROGRESS

The first study used data from 13 cross-sectional surveys and showed Spearman correlation coefficients ranging from 0.88 to 0.986 between the non-laboratory total CVD risk score and the laboratory-based risk score. The further validation of the non-laboratory total CVD risk assessment tool to assess the accuracy of its predictions is still awaiting regional mortality data from the Eden District five years after the baseline survey for the Eden trial. The national CVD mortality data, 10 years after the earliest use of the total CVD risk assessment tool, based on the 1998 data of the first National Demographic and Health Survey to calculate CVD risk, is also still outstanding. Organisations such as the South African Heart and Stroke Foundation have expressed interest in using the screening tool in their regular CVD screening programme across South Africa. Plans are being made to install the non-laboratory CVD risk assessment tool on the CDIA website for easy and broad access.



## Economic modelling of the impact of preventive and management interventions for chronic diseases

**Research team:** Thomas Gaziano, Ankur Panday, Debbie Bradshaw, James Irlam, Lara Fairall, Krisela Steyn and Naomi Levitt

### BACKGROUND

The aim is to develop a CVD prevention and management model that will allow the accurate prediction of CVD events and which can be used in cost-effectiveness analyses of screening and intervention strategies.

### PROGRESS

The model (state-transition simulation models, also called Markov models) has been completed and is regularly calibrated with the latest available South African mortality estimates. To date, the model has been used to conduct four cost-effectiveness analyses on South African data sets. A manuscript describing the model is being prepared; one paper has been published and two have been submitted for publication in scientific journals.



## Lifestyle intervention tools: ichange4health package (previously called the Putting Prevention into Practice package)

**Research team:** Katherine Murphy, Zelra Malan, Krisela Steyn, Catherine Draper, Tracy Kolbe-Alexander, Estelle Lambert and Bob Mash

### BACKGROUND

The aim of this project is to develop and evaluate a lifestyle modification training programme for healthcare providers and to develop lifestyle intervention tools for common modifiable CVD lifestyle risk factors.

### PROGRESS

Lifestyle intervention tools and a training package for healthcare providers are in the public domain and available on two websites, namely [www.ichange4health.co.za](http://www.ichange4health.co.za) and the CDIA website [www.health.uct.ac.za/fhs/research/groupings/cdia/about](http://www.health.uct.ac.za/fhs/research/groupings/cdia/about).



iCHANGE4HEALTH Training Programme

## Project 4

The tools to support patients to improve their lifestyle include:

- ▶ A patient-held record for adults called the *My Road to Health Card* that aims to assist healthcare providers negotiate behaviour change goals
- ▶ Comprehensive pamphlets with information on how to increase levels of physical activity, quit smoking, improve their diet and modify alcohol use
- ▶ A recipe book containing guidelines for healthy eating and 71 healthy recipes suitable for families with a limited budget
- ▶ A training manual for healthcare providers called *Helping People Change*, which introduces healthcare providers to brief behaviour change counselling, based on best practice methods and uses the NCD behavioral risk factors to illustrate the training principles

Training for healthcare providers in the use of the package was central to activities in 2014. Pharmaceutical company, Pharmadynamics, sponsored the training of private general practitioners at a function at the Arabella Hotel near Hermanus in June 2014, groups of biokineticists at the Sports Science Institute in July 2014 and at the Life through Movement Congress at Stellenbosch University in September 2014. In addition, a mixed group of healthcare providers and professionals were trained as part of a Smoking Cessation Symposium organised by the Lung Institute at the University of Cape Town in October 2014. A project to evaluate the usefulness of this training programme for

biokineticists is being planned. Two training courses in motivational interviewing (MI) were delivered by Drs Bob Mash, Zelra Malan and Katherine Murphy in 2014 – one an advanced course in MI and the other an introduction to MI. Both courses were convened by the Department of Family Medicine and Primary Care, University of Stellenbosch.

The *My Road to Health Card* for adults has been adapted for use by the Western Cape Department of Health.

**Research team:** Thandi Puoane, Lungiswa Tsoliekile, Naomi Levitt, Krisela Steyn and Helen Schneider

### BACKGROUND

The aim of this project is to review and define the current role of community health workers (CHWs) in caring for patients with chronic diseases. The requirements for the expansion of a CHW's role will also be defined.

### PROGRESS

The project included an observational study of CHWs, which was undertaken while they were conducting their daily activities with patients with chronic diseases by means of a questionnaire and interviews with a total of 150 CHWs. Findings indicate that the training of CHWs, especially in NCDs, is fragmented; that training of CHWs is provided by numerous sources, which results in them receiving varying messages from a variety of trainers, which may, in turn, influence the messages that the clients receive at community level. To date, one paper has been published and a second manuscript based on this data is in draft form.



**Research team:** Kirsty Bobrow, David Springer, Thomas Brennan, Lionel Tarassenko, Andrew Farmer, Naomi Levitt and Krisela Steyn

### BACKGROUND

The aim of the study is to conduct a pragmatic randomised controlled trial to test the efficacy of an SMS-text-based intervention to support treatment adherence, compared to usual care for adult patients receiving hypertension care in resource-poor primary care settings in Cape Town. The intervention is a structured programme of clinic appointments and medication collection reminders, medication adherence support and hypertension-related education, delivered remotely through informative or interactive SMS-text messages.

### PROGRESS

The research team enrolled 1 372 participants in the study and, after the one-year intervention programme, completed final data collection in early 2014, with an 87% follow-up rate. Analyses of the trial outcome showed that SMS-text messages helped people to remember to collect their high blood pressure and other chronic disease medications. The text messages have helped to lower some people's blood pressure, probably because they collected and took their medicines more often. The team also completed the qualitative evaluation of the trial, which included hosting a series of stakeholder workshops in Cape Town in May 2014. Data from this study have been analysed and showed that the SMS-text messages

were extremely helpful in improving patients' adherence to treatment and made them feel more in control of managing their health. The trial protocol has been published and the manuscript on the main outcome of the trial and the qualitative survey have been submitted to scientific journals.

Furthermore, collaborators from the CDIA, the MRC South Africa, and the University of Oxford were awarded funding through the Global Alliance for Chronic Diseases Initiative for a follow-up study of the effect of SMS-text messages on adherence support for people with type 2 diabetes in three settings – Cape Town and Johannesburg in South Africa and Lilongwe in Malawi. The research team is in the process of setting up this study.



PROJECT

# 7

An evaluation of community health workers' screening for CVD in the community in four developing countries using the non-laboratory total CVD risk factor score

Project 7 Research Team: South Africa, Guatemala, Bangladesh and Mexico



**Research team in South Africa:** Naomi Levitt, Shafika Abrahams-Gessel, Thandi Puoane, Thomas Gaziano and Jabulisiwe Zulu

## BACKGROUND

This study proposes to train community health workers (CHWs) to use the non-laboratory-based CVD total risk assessment tool described in Project 2 to identify persons at high risk for CVD in community settings in South Africa, Bangladesh, Guatemala and Mexico. The referral pattern for high-risk patients from CHWs to a trained health professional at a community health clinic will also be assessed. CHWs' knowledge levels and retention of knowledge about CVD and its risk factors will be evaluated, as will the costs of the programme.

## PROGRESS

Across the four sites, 42 CHWs recruited 4 383 people and completed 4 049 screenings for CVD risk among community members who had not reported a prior diagnosis of hypertension, diabetes mellitus or heart disease. Agreement in scores obtained by CHWs compared to health professionals ranged between 94% and 99%, demonstrating that non-professional health workers such as CHWs can be adequately trained to screen and identify those at high risk for CVD using this tool. The first manuscript of these results has been submitted to a peer-reviewed journal. A further three manuscripts have been submitted, two on the training

and supervision of CHWs and the other on the referral pattern for high-risk patients from CHWs to a trained health professional at a community health clinic.

Focus groups with CHWs and in-depth key informant interviews to assess issues related to integrating CHWs into involvement in screening efforts to prevent CVD and other NCDs have been completed, transcribed and translated at three sites (Guatemala, Mexico and South Africa). Analysis is in progress. An extension of this study, involving the development of a mobile phone application of the total CVD risk assessment for use by CHWs, was used by a master's student for his dissertation. A manuscript titled *An evaluation of community health workers, mHealth and screening for cardiovascular disease in low-resource settings* has been submitted to the journal *Health Affairs* to be considered for publication.

# PROJECT 8

A randomised controlled trial to evaluate the effectiveness of a group diabetic education programme using motivational interviewing in under-served communities in South Africa

**Research team:** Bob Mash, Naomi Levitt, Stephen Rollnick, Katherine Murphy, Krisela Steyn, Merrick Zwarenstein, Hilary Rhode (co-ordinator), Unita van Vuuren, Buyelwa Majikela-Dlangamandla, Roland Kaukamp and Maureen McRae

## PROGRESS

The project is complete and four peer-reviewed indexed papers have been published.

The Cape Town metropolitan District Health Services (DHS) have been implementing diabetes group education for new patients with diabetes in selected community health centres under the title Diabetes Lifestyle Education Collaboration and Action (D-LECA) project. Improving Global Health (IGH) fellows from the UK on six-month attachments have been assisting the DHS. An evaluation of the project should be available in 2015.

This project was supported by a Bringing Research in Diabetes to Global Environments (BRIDGES) grant from the International Diabetes Federation. BRIDGES, an International Diabetes Federation project, is supported by an educational grant from Lilly Diabetes (ST09-040).





## A qualitative study of the nutrition patterns of low-income South Africans

**Research team:** Anniza de Villiers, Katherine Murphy, Debbie Jonathan and Gillian Hill

### BACKGROUND AND OBJECTIVES

The planning of a dietary intervention tool for the iChange4Health lifestyle modification package (described in Project 4) required an understanding of the commonly consumed foods, the food preferences and the inexpensive, healthy options available and acceptable to the lower socio-economic communities of diverse cultures in South Africa.

### PROGRESS

A total of 22 focus group discussions were conducted in Cape Town, Durban, Umtata, East London, Johannesburg and Pretoria. A brief questionnaire on demographics, dietary habits and the most commonly used cooking methods was administered prior to each focus group, which included 167 participants. Key informant interviews with dietitians and nutritionists working with this population added to the focus group findings.

The research team identified important issues to take into account in the development of the resource. These included the need to directly address prevalent misconceptions about healthy eating and unhealthy eating practices; teach skills relating to food purchasing and preparation; represent diverse cultural traditions; and consider the issues of affordability and availability of food ingredients. This study demonstrates the value of using formative research in the design of nutrition-related communication in a multicultural, poor, urban South African setting.

A manuscript titled *Using formative research to develop a nutrition education resource aimed at assisting low-income households in South Africa adopt a healthier diet* has been submitted to the journal - *Health Education Research*.



# PROGRESS WITH ONGOING PROJECTS



## What are the effects of blanket screening for hypertension and/or diabetes mellitus compared to other forms of screening or no screening in South Africa?

**Research team:** Solange Durão, Yemisi Ajumobi, Tamara Kredo, Celeste Naude, Naomi Levitt, Krisela Steyn and Taryn Young

### BACKGROUND

A collaboration between CDIA, the Centre for Evidence-based Health Care and the South African Cochrane Centre has been established (R<sup>3</sup> project), which involves the use of systematic reviews to inform CDIA's work.

### OBJECTIVES

To prepare an overview of systematic reviews to assess the effects of blanket screening for hypertension and/or diabetes mellitus (DM) compared to other forms of screening or no screening.

### METHODS

This overview identified systematic reviews (Cochrane and non-Cochrane) of screening interventions for DM and/or hypertension among the general population without known DM or hypertension. It compared population- and community-wide screening (also referred to as blanket screening or screening for all) specifically for DM and/or hypertension, using any type of screening test or a combination of screening tests compared to other screening approaches (e.g. targeted screening and opportunistic screening) and no screening.

Comprehensive searches were conducted and two completed systematic reviews were found that addressed some aspects of the project's questions regarding population versus targeted or no screening for DM and hypertension.

Krogsboll (2012) found that health checks for the general population did not reduce general and cardiovascular-related morbidity, and mortality and results were poorly reported for effect on new diagnoses and the impact on the health system. Ebrahim (1998) found increased coverage with intensive screening in areas with poor healthcare coverage. The researchers also found an ongoing Cochrane review assessing the efficacy of screening for type 2 diabetes, compared with regular care, in reducing morbidity and mortality related to the disease. Findings of the overview were presented at the annual CDIA meeting in 2013 and a manuscript is being planned.

### PROGRESS IN 2014

The overview was completed in 2014 and published in the *SAMJ* in February 2015. The overview identified a gap in the evidence regarding systematic reviews that answer the question of this project. The overview also identified a protocol for a Cochrane Review of screening interventions for type 2 diabetes that was published in 2005, but for which there is no complete review. Thus, Nasheeta Peer and Solange Durão, after liaising with the relevant Cochrane Review Group and author team, have taken over the task of completing this review, which will be carried out during 2015. This project's advisory panel includes Taryn Young, Tamara Kredo and Naomi Levitt.

**Research team:** Thandi Puoane, Ehimario Igumbor, Gavin Reagon, Gail Hughes, David Sanders, Vicki Lambert, Naomi Levitt, Andre Kengne and Bongani Mayosi

**PhD student:** Kufre Okop

### BACKGROUND AND OBJECTIVES

The PURE study is a global prospective study that seeks to identify the population level factors that drive the development of known risk factors for NCDs, so that their distribution in the entire population can be shifted favourably by appropriate societal interventions (primordial prevention). The study is being conducted in 17 countries (including high-income, middle-income and low-income countries and from every major region of the world) and will involve investigations of 150 000 individuals. It also includes investigation of community-level factors (urban-rural differences; the built environment; the policy environment related to tobacco and food; and social factors), household-level factors (family structure; income; housing; and so on) and individual-level factors (lifestyle behaviours and attitudes; and genetic markers). Since 2009, the University of the Western Cape School of Public Health has been leading the research collaboration, with researchers from the Medical Research Council, Human Sciences Research Council and the University of Cape Town contributing to the PURE global study. A South African arm of the study was initiated and incorporates urban and rural communities within South Africa's Western Cape and Eastern Cape provinces into the global study. In 2013, the PURE study researchers chose to link the project to the CDIA network.

### METHODS

During the first three years (2009 to 2011) of the PURE study, a total of 2 072 participants were recruited from both rural and urban sites, with the main research objective of this stage being 'to examine the relationship between societal influences and prevalence of risk factors and chronic non-communicable diseases'. Information collected through interviews and basic medical measures (such as weight, height and blood pressure) of participants and the environment addressed this objective. As the same individuals will be contacted every three years to be interviewed and have these medical measures repeated, the second objective of the PURE study, 'to examine the relationship between societal determinants, incidence of chronic non-communicable disease events and changes in rates of selected risk factors' will then be achieved.

### ONGOING FINDINGS

Of the 2 072 participants recruited at baseline, 1 970 (95%) were successfully contacted for a second year follow-up. This reduction in numbers includes 133 deaths reported from both sites.

### PROGRESS IN 2014

The fourth year of data collection is in progress. There are two new projects that are nested in the PURE study: The National Research Foundation study to investigate the influence of the food environment in the development of NCDs (hypertension and diabetes) and a project investigating the interface of cardiovascular diseases and urban-rural healthcare systems in South Africa.

**Research team:** Bob Mash, Rajiv Erasmus and Megan Rensburg

**Master's students:** Cobus Vos and Abimbola Ugoagwu

### BACKGROUND AND OBJECTIVES

The main aim of this study is to investigate if the placement of a point of care (POC) device for glycosylated haemoglobin (HbA1c) measurement in community healthcare centres in Cape Town for the management and care of diabetic patients would lead to an improvement in the frequency of annual HbA1c, treatment intensification, patient education and glycaemic control. Other objectives included evaluating the technical quality of the POC testing in primary care settings, the experience of the primary care providers in using the POC machine and the incremental costs.

### METHODS

A quasi-experimental study was implemented in four health centres draining to the Helderberg District Hospital. Two health centres implemented POC testing for a period of one year, while two matched health centres continued with care as usual. The sample size required was 300 participants per arm. The primary outcome of the study was the difference in the percentage of patients who received an HbA1c test to accurately determine their glycaemic control in the last 12 months.

Secondary outcomes included differences in:

- The percentage of patients receiving an HbA1c test in the previous 12 months
- The percentage of patients receiving more than one HbA1c test in the previous 12 months
- Treatment intensification, as measured by the percentage of patients started on a new medication to lower glucose
- Treatment intensification, as measured by the difference in the mean dose of metformin, glibenclamide, gliclazide or insulin
- The percentage of patients referred for counselling (diabetes health education)
- The percentage of patients with counselling recorded in the consultation
- The mean HbA1c result

### PROGRESS IN 2014

Data collection was completed and focus group interviews were held with the health workers at the intervention sites. The initial analyses suggested that immediate feedback to the patients on their level of control occurred more frequently in the intervention clinics compared to the control clinics; however, having the HbA1c test results immediately available did not lead to a change in clinical practice. Glycaemic control was better in the intervention group and this effect needs to be followed up. Analysis of the data is in progress.

# NEW PROJECTS STARTED IN 2014



## Patterns of HIV, TB, and non-communicable disease multi-morbidity in peri-urban South Africa: A cross-sectional study

**Research team:** Tolu Oni, Elizabeth Youngblood, Andrew Boule, Nuala McGrath, Robert Wilkinson and Naomi Levitt

### OVERALL AIM OF THE PROJECT

To use routine data from a public health programme to explore the distribution of chronic diseases and patterns of HIV, TB, and NCD multi-morbidity (MM) in adults who have received care and treatment in a public community health clinic.

### METHODS

A study was conducted to describe the epidemiology of multi-morbidity in a primary healthcare clinic in Khayelitsha. Adults with at least one of the following diseases: HIV, tuberculosis (TB), diabetes (DM), or hypertension (HPT) were identified between September 2012 and May 2013 on electronic databases. Using unique patient identifiers, drugs prescribed across all facilities in the province were linked to each patient and each drug class assigned a condition.

### PROGRESS IN 2014

These four diseases accounted for 45% of all prescription visits. Among 14 364 chronic disease patients, HPT was the most common morbidity (65%). Of these, 22.6% of patients had MM, with an increasing prevalence with age; and a high prevalence among younger antiretroviral therapy (ART) patients (26% and 30% in 18- to 35-year and 36- to 45-year age groups, respectively). Among these younger ART patients with MM, HPT and DM prevalence was higher than in those not on ART.

The study highlighted the coexistence of multiple infectious diseases and NCDs. This presents both challenges, such as increasing complexity and the impact on health services, providers and patients, as well as opportunities for chronic disease screening in a population, which is linked to care. It also necessitates rethinking of models of healthcare delivery and requires policy interventions to integrate and co-ordinate management of co-morbid chronic diseases. A manuscript has been submitted to *Bio-med Central (BMC) Infectious Diseases* to be considered for publication.

# PROJECT 2

## Knowledge and perceptions about cardiovascular disease and its risk factors: Findings of a qualitative investigation from a low-income peri-urban community in the Western Cape, South Africa

**Research team:** Sam Surka, Krisela Steyn, Thomas Gaziano, Katherine Murphy, Naomi Levitt

### BACKGROUND AND OBJECTIVES

South Africa currently faces an increasing burden of cardiovascular disease (CVD). Few individuals that are identified as high risk during community screening initiatives attend clinics when referred. Low health literacy and risk perception have been identified as possible causes. This qualitative study aimed to deepen understanding of cardiovascular disease risk from a community member's perspective.

### METHOD

A series of focus group discussions were conducted with individuals from a low-income peri-urban community in the Western Cape. Their total CVD risk score was calculated after the necessary measurements were taken. The study used a facilitator who spoke the local language to ask participants about their knowledge and perceptions of CVD and its risk factors and then manually analysed the qualitative content to evaluate the data and grouped similar content into themes.

### PROGRESS IN 2014

Twenty-eight respondents participated in three focus group discussions. The average age was 53 years and the average level of education was Grade 9. Thirty-six percent were found to have moderate to high risk of CVD. While participants were familiar with the terms

'hypertension, heart attacks and strokes', they were unsure what the conditions entailed and the term 'cardiovascular disease' was poorly understood. Of possible preventive actions, only better diets, not smoking and limited alcohol use were mentioned. The majority of the respondents were unable to provide a definition or explanation of their general concept of risk and risk for heart attacks and strokes were only mentioned in the most vague and limited way.

When asked if they felt they were at risk of developing CVD, based on the CVD risk score calculated, respondents were unable to associate a high risk score with a higher likelihood of developing CVD. In general, respondents felt that it was one or the other, i.e. that they were either going to get it when their scores are high, or not going to get it if their scores are low. Respondents felt helpless about making lifestyle changes. This was largely attributed to dire living conditions, poverty and - if they were diagnosed with CVD, they also felt that progression was out of their hands and 'it was only God who could help them'. This lack of knowledge, risk perception and perceived inability to address their conditions will need to be taken into consideration when designing or implementing CVD risk assessment interventions.

A manuscript has been drafted and is under review by co-authors in preparation of submission to a suitable indexed journal.

**Research team:** Jim Sallis, Adewale Oyeyemi, Estelle Lambert, Clare Bartels, Tracy Kolbe-Alexander, Sarah Moss and Pasmore Malambo

#### BACKGROUND AND METHODS

This project involves the adaptation of an instrument used globally to measure the perceived 'walkability' of neighbourhood built environments and to measure this against actual physical activity in different countries. The study will be validating the instrument with Professor Jim Sallis from San Diego and colleagues from Nigeria, Kenya, Ghana, Uganda, Mozambique, Cameroon and South Africa.

#### PROGRESS IN 2014

Researchers have completed testing on more than 100 subjects from Khayelitsha and Langa in Cape Town for validity (against objectively measured physical activity, and more than 50 subjects for test-retest reliability). Data is being combined for a cross-country comparison.



# CDIA MEMBERS' RESEARCH PROJECTS FUNDED FROM OTHER SOURCES

Back row: Sam Surka, Bob Mash

Middle row: Lungiswa Tsolekile, Katherine Murphy, Kufre Okop, Vimbayi Mafunda, Nicole Ellman, Clare Bartels, Mahmoud Werfalli, Beatrice Nojilana, Enock Havyarimana, Zelra Malan, David Sanders

Front Row: Thandi Puoane, Krisela Steyn, Naomi (Dinky) Levitt, Debbie Bradshaw, Vicki Lambert



**Professor Thandi Puoane** is the South African lead of the SMART2D project, which is a European Union-funded research collaboration funded under the EU Horizon 2020 programme. The programme focuses on the development of new interventions for addressing type 2 diabetes mellitus (T2DM) prevention and management for target populations in selected low-, middle- and high-income countries. The study will be conducted in Sweden, South Africa and Uganda. The research team has recently engaged the Diabetes Association to begin the dialogue towards the development of policies for improving diabetic self-management, based on the work of the SMART2D project.

*Project Ntshembo – Health and well-being of female adolescents: Limiting the inter-generational risk of metabolic disease*, is being conducted by **Professor Shane Norris, Professor Vicki Lambert and Drs Lisa Micklesfield, Catherine Draper** and others. The word *Ntshembo* means 'hope' in Shangaan, one of SA's official languages, and the main local language used in the study area; the project's name therefore has the connotation of hope for a healthier future. The project started in 2007 with collaborating institutions that include the University of the Witwatersrand, University of Cambridge (UK), University of North Carolina at Chapel Hill (USA), University of Oxford (UK), Umea University (Sweden), University of Southampton (UK) and the University of Cape Town (SA). An Intervention Mapping approach has been used in the development of this intervention and selected four key behavioural objectives: to eat a healthy, balanced diet; increase physical activity;

reduce sedentary behaviour and promote reproductive health. Appropriate behaviour change techniques are suggested and a theoretical framework outlining components of relevant behaviour change theories is presented. It is proposed that the *Ntshembo* intervention will be community based, involving the use of specialist adolescent community health workers, who will deliver a complex intervention consisting of individual, peer, family and community mobilisation components. The *Ntshembo* intervention is novel, both in SA and globally, as it is: (1) based on strong evidence, extensive formative work and best practice from evaluated interventions; (2) combines theory with evidence to inform intervention components; (3) includes multiple domains of influence (community through to the individual); (4) focuses on an at-risk target group; and (5) embeds within existing and planned health service priorities in SA.

A recent single centre cohort study conducted by **Professor Karen Sliwa** of 225 consecutive women presenting with cardiac disease in pregnancy at a dedicated cardiac disease in maternity clinic at Groote Schuur hospital, Cape Town, highlighted the complex burden of symptomatic rheumatic heart disease (26%), congenital heart disease (32%) and severe cardiomyopathy (27%), among other cardiac conditions. Mortality occurred typically in the postpartum period beyond the standard date of recording maternal death, as also highlighted in a recent publication in *The Lancet*.

The confidential inquiry into maternal death in South Africa reported that of the 4 867 deaths reported over two years, 14% were due to hypertensive disorders, with

## CDIA members' research projects funded from other sources

another 8.8% due to medical and surgical conditions. This report has identified cardiac disease as the most common species of medical disorders likely to account for maternal mortality – overall, medical disorders complicating pregnancy were the fourth most common cause of maternal death during pregnancy. Within this background, Professor Sliwa has been asked to prepare an invited review on the management of valvular disease in pregnancy. She invited an obstetrician and cardiothoracic surgeon and included colleagues from high- and lower-to-middle-income countries to provide a practical guide on the management of valvular disease (e.g. rheumatic heart disease) in pregnancy, including pre-conception counselling and risk stratification, as well as surgical and medical management.

**Professor Krisela Steyn**, working with the research team of the SALT WATCH initiative of the Heart and Stroke Foundation under the leadership of **Professor Edelweiss Wentzel-Viljoen**, has developed the protocol for a pre- and post-survey to assess the impact of the salt reduction advertising campaign, led by the Heart and Stroke Foundation of South Africa, which was on television and radio stations. The fieldwork of the survey before the initiation of the campaign was conducted by the market research company, MQ Market Intelligence. The initial results suggest that the knowledge of the target population about the dangers of the intake of a diet high in salt is limited.

The third *National Demographic and Health Survey* is being planned, under the leadership of **Professor Debbie Bradshaw** of the South African Medical Research Council. The project is a collaboration

between the national Department of Health, Statistics South Africa and ICF International, a company from the USA. A number of CDIA members are advising on the planning and development of questionnaires for the NCD-related adult health modules of the NDHS for 2015.

South Africa's second *Burden of Disease and Comparative Risk Assessment* is in progress, led by **Professor Bradshaw**.

**Professor Vicki Lambert** and collaborators received a two-year NRF Competitive Grant for Rated Researchers titled *Slow, Stop or Stem the Tide of Obesity in the People of South Africa' (STOP-SA)*. The overall objective of this two-year study is to integrate the various best-practice quantitative and qualitative methodological actor-based social approaches across the health science and social science disciplines, to produce a harmonised protocol, capable of capturing and describing a comprehensive risk matrix for overweight and obesity. Ultimately, the researchers hope to apply these data, as part of an intervention mapping process, both within and outside the healthcare sector, to explore and develop feasible and appropriate interventions, integrating community-level and household-level food and physical activity environments to slow, stop, and stem the tide of overweight and obesity in the people of South Africa (STOP-SA).

A *South African National Educator Wellness Study* is being led by **Professor Lambert**, in collaboration with the national Department of Basic Education and Discovery Vitality Programme. This quasi-

## CDIA members' research projects funded from other sources

experimental, controlled study will determine the efficacy of a single, tailored feedback print communication and scheduled delivery of four to 12 targeted SMS-text messages, based on goal setting, to South African primary school educators and staff, following health risk assessment, compared to standard of care, in changing health risk status over a six-month period in South African primary school educators. The study is in the field and more than 500 teachers in over 14 schools have been recruited.

**Dr Thomas Gaziano** is the principal investigator on the project titled: *Global cardiovascular disease policy model for screening, prevention and treatment*.

The project involves the continued development and validation of a cardiovascular disease model to estimate the health and economic consequences of cardiovascular screening, treatment and prevention interventions in the US population, several sub-populations and selected non-US populations.

The Centre for Evidence-based Health Care at the University of Stellenbosch, under the leadership of



**Dr Celeste Naude** and colleagues, set out to examine the available evidence to inform responses to ongoing debates regarding the ability of low carbohydrate diets and iso-energetic balanced diets to reduce weight and cardiovascular risk factors. Using an agreed protocol, they first examined evidence from existing systematic reviews. They sought any review that synthesised evidence on dietary macronutrient manipulation and cardiovascular outcomes or risk factors before March 2014. They screened 851 records and included 50 reviews; however, these had a number of methodological constraints precluding the possibility that they could meaningfully address the question they set out to answer. In light of these shortcomings, they carried out their own systematic review.

To further inform the context and clarify the research question, advocacy literature and putative benefits of low carbohydrate diets for weight loss and cardiovascular health were considered within the context of literature on 'balanced, recommended' diets. Low carbohydrate diets widely promoted through various websites were examined, as were dietary recommendations from the USA, Canada, Australia and New Zealand, Nordic countries and Europe. They concluded their systematic review of randomised controlled trials and published it in July 2014. Their findings were hotly debated in the media in South Africa. Their research question was: *'In weight loss diets with equivalent energy content, how do low carbohydrate diets compare with balanced diets in relation to change in weight and other cardiovascular risk factors in overweight and obese adults?'* They

compared the effects of low carbohydrate and iso-energetic balanced weight loss diets in overweight and obese adults assessed in randomised controlled trials (minimum follow-up of 12 weeks), and summarised the effects on weight, as well as on cardiovascular and diabetes risk. Dietary criteria were derived from existing global macronutrient recommendations. They searched Medline, EMBASE and CENTRAL (19 March 2014). Analysis was stratified by outcomes at three to six months and one to two years, and participants with diabetes were analysed separately. After screening 3 450 records, nineteen trials were included (n=3 209). In non-diabetic participants, the analysis showed no difference in mean weight loss in the two groups at three to six months.

Furthermore, little or no difference was detected at three to six months and one to two years for blood pressure, LDL, HDL and total cholesterol, triglycerides and fasting blood glucose (>914 participants). In diabetic participants, findings showed a similar pattern. They therefore concluded that trials show weight loss in the short term, irrespective of whether the iso-energetic weight loss diets were low carbohydrate or had balanced macronutrient compositions. There is probably little or no difference in weight loss and changes in cardiovascular risk factors up to two years of follow-up when overweight and obese adults, with or without type 2 diabetes, are randomised to low carbohydrate diets and iso-energetic balanced weight loss diets.

CDIA members' research projects funded from other sources



# MONITORING AND EVALUATION OF HEALTH SERVICES

The Integrated Audit Tool for Chronic Diseases is administered internally annually within the Western Cape Department of Health. Its primary purpose is to measure clinical and managerial performance related to the management of chronic diseases; however, as it is undertaken annually under the leadership of Unita Van Vuuren, a broader purpose of improving clinical management of patients and ultimately optimising outcomes in patients has emerged. The audit first took place in 2009 and since then, has grown with respect to the number of primary healthcare facilities that are audited.



In 2014, a total of 187 facilities participated in the audit. While the number of facilities in the City of Cape Town metro district has remained fairly constant since 2011, the number of facilities in the rural districts participating has increased four-fold over the same period.

Results of the 2014 audit: availability of equipment in the preparation room has increased consistently since 2009 and scored within a range of 94% and 100% during this period. Consulting rooms are generally well equipped, but not at 100%. Items are found in consulting rooms at a range of 72% to 99%, and hence, there is still room for improvement. The availability of obese blood pressure cuffs should be increased, as they were only available in 69 of the participating clinics' consulting rooms. The availability of eye drops has remained consistent and pin-holes have increased, compared to last year. This is a good outcome, considering that there was a downward trend for both items from 2009 to 2013.

All chronic care processes showed an increase when compared to 2013. A central dispensing unit was used in 98% of facilities, while 83% had access to group education and community support groups, respectively. The elements measuring chronic care teams and chronic care teams that meet regularly were combined in this year's tool and the outcome was 82%. In addition to this change, two new elements were introduced, which measured an action plan to include audit outcomes and a process for calibrating baumanometers. These were 76% and 63%, respectively.

There was an increase in the proportion of diabetic patients who received annual investigation. However, for prognostic factors, only *Last BP < 140/80*; *cholesterol < 4.5* and *creatinine < 120* showed an increase in the

proportion of patients meeting these reference values. The reference values for *BMI < 25* and *HbA1C < 7* were both met by a lower proportion of patients compared to 2013. The range for these tests was 68% to 82%. Overall, only 9% of diabetic patients received all of the prescribed annual investigations and only 1% was completely controlled.

As with diabetes, the proportion of hypertension patients receiving prescribed annual investigations increased, compared to 2013. A random blood glucose test was recorded for 69% of patients, with 68% for creatinine, 70% for random total cholesterol and 82% urine dipstick tests for proteinuria. For prognostic factors, there was an increase in the proportion of patients meeting the reference values for *BMI < 25*, *BP < 140/90*, *cholesterol < 5* and *creatinine < 120*, compared to 2012 (59%, 20%, 37% and 66%, respectively). Forty-three percent of patients were fully evaluated and 6% were fully controlled.

Counselling asthmatics for smoking and inhaler technique was 62% and 53%, respectively. Eighty-seven percent of asthmatics were prescribed steroids and overall, 35% of asthmatics were well controlled. However, 35% of patients did not have their asthma control recorded and 21% of asthmatics were completely unevaluated.

Chronic obstructive pulmonary disease is not managed optimally. Counselling about smoking and inhaler technique is 70% and 49%, respectively. The range for this is wide between the districts.

# CAPACITY DEVELOPMENT AND RESEARCH TRAINING

The following CDIA students graduated in 2014 - their thesis titles are provided:



## **THANDIE CHUMA, M.PHIL. SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF CAPE TOWN**

- **Thesis topic:** A qualitative study of diabetic and hypertensive patients in Cape Town, South Africa: Their experiences of primary healthcare and their struggles with self-management

## **BUYELWA MAJIKELA-DLANGAMANDLA, M.SC. (NURSING), SCHOOL OF NURSING, UNIVERSITY OF CAPE TOWN**

- **Thesis topic:** An evaluation of health promoters' adherence to a planned diabetes educational intervention that includes motivational interviewing at community health centres in Cape Town

## **DR ROLAND KRAUKAMP, MMED (FAM MED), UNIVERSITY OF STELLENBOSCH**

- **Thesis topic:** Determination of the cost of a group diabetes education programme delivered by health promoters trained in motivational interviewing

The following CDIA students are still registered to continue their studies:

**PHD STUDENT: KUFRE JOSEPH OKOP (SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF THE WESTERN CAPE)**

► **Thesis topic:** Exploration of the association between body image, body fat, and total cardiovascular risk among adults in a rural and an urban community of South Africa

**Supervisor: Professor Thandi Puoane** (School of Public Health, University of the Western Cape)

**Co-supervisor: Professor Naomi Levitt** (Department of Medicine, CDIA, University of Cape Town)

**SUMMARY**

Obesity remains a sustained epidemic and is associated with increasing cardiovascular disease (CVD), particularly in developing countries under transition. This study seeks to answer the question: *What relationships exist between body image, body fat percentage, and total non-blood-based CVD risk and risk factors among men and women in resource-poor communities?* This is an ancillary study nested within a multi-country population-based prospective urban and rural epidemiology (PURE) study.

**PROGRESS IN 2014**

A manuscript on the socio-demographic, lifestyle and psychological factors associated with excessive body weight by gender is being peer reviewed by

*PLOS Medicine Journal*. In addition, a qualitative article on perceived severity of obesity and risk to cardiovascular disease and willingness to control weight has been drafted. Findings from this research have been presented in local symposia. The chapters for the PhD thesis are being developed.

**PHD STUDENT: DR NAOMI FOLB (UNIVERSITY OF CAPE TOWN LUNG INSTITUTE)**

► **Thesis topic:** Effectiveness of an integrated care guideline training programme (Primary Care 101) on the processes and outcomes of chronic diseases in primary care in South Africa: A pragmatic parallel cluster-randomised trial

**Supervisor: Dr Lara Fairall** (University of Cape Town Lung Institute)

**Co-supervisor: Professor Max Bachmann** (Norwich Medical School, University of East Anglia, UK)

**SUMMARY**

The aim of the study is to test whether an integrated guideline training programme (Primary Care 101) for primary healthcare nurses and doctors improves quality of care for chronic diseases over and above usual training and support. The trial focused on evaluating four disease groups: hypertension, diabetes, chronic respiratory disease and depression. The study is a pragmatic cluster

randomised controlled trial with 38 clinics in the Eden and Overberg districts of the Western Cape, randomised to two parallel arms and outcomes assessed on individual participants.

## **PROGRESS 2014**

A total of 4 393 patients were interviewed at baseline, prior to nurses in the intervention clinics being trained in Primary Care 101. Patients were re-interviewed approximately 14 months after their baseline interview and a follow up rate of 90% was achieved. The findings are currently being prepared for publication.

### **The following publications are planned for PhD submission:**

1. Main study paper: analysis of primary and secondary outcomes on follow-up data
2. Baseline paper: accepted for submission in the *SAMJ*
3. Socio-economic predictors of depression: submitted for publication
4. Socio-economic predictors of hypertension and diabetes control

### **MPH STUDENT (HEALTH ECONOMICS): DR RENÉE DE WAAL MPH (CDIA HEALTH ECONOMICS FELLOWSHIP, UNIVERSITY OF CAPE TOWN)**

► **Mini dissertation topic:** Economic evaluation of provision of statins in primary healthcare in the Western Cape

**Supervisor:** Dr Susan Cleary (Health Economics Unit, University of Cape Town)

## **SUMMARY**

The aim of the project is to compare the costs and consequences of various models for providing statins for the primary prevention of cardiovascular disease, in order to inform clinical practice in the Western Cape. The interventions include prescribing different doses of statins at different levels of care (primary healthcare versus tertiary hospitals), and treating to a target cholesterol concentration versus treating patients with a standard dose, without monitoring cholesterol concentrations. The costs and consequences of the interventions will be modelled, from a provider perspective, using published data as well as data collected locally. Efficacy and safety data (i.e. risks of various cardiovascular outcomes, complications and drug side effects) will be drawn from published studies, as no suitable local cohort data exist. Data regarding the costs of the interventions and of treating cardiovascular disease, complications and adverse drug reactions will be collected in the Western Cape.

## **PROGRESS IN 2014**

The student obtained relevant data regarding patient admissions, procedures, drugs and investigations, and their associated costs, in order to estimate the costs associated with treating myocardial infarctions, unstable angina and strokes at Groote Schuur hospital (after receiving the appropriate ethics committee and provincial approvals). She developed a Markov model to estimate the long-term cost-effectiveness of various strategies for providing statin therapy, and performed a literature review to inform the necessary model inputs. She wrote up the literature review

section of her mini dissertation. She plans to complete the necessary data management this year, and to complete the cost-effectiveness analysis and write up of her mini dissertation early next year.

### **PHD STUDENT: DR MAHMOUD WERFALLI (DEPARTMENT OF MEDICINE, CDIA, UNIVERSITY OF CAPE TOWN)**

► **Supervisor: Professor Naomi Levitt** (Division of Diabetes and Endocrinology, Department of Medicine, CDIA, University of Cape Town)

**Co-supervisor: Dr Sebastiana Kalula** (Division of Geriatric Medicine, Department of Medicine, University of Cape Town)

**Thesis topic:** Development, implementation and evaluation of diabetes self-care management strategy targeted at older people with type 2 diabetes mellitus attending community health centres (CHCs)

### **SUMMARY**

Diabetes is becoming a significant problem in Africa, but little emphasis has been placed on research relating to the older person with diabetes on the continent. This research project is based on the theoretical framework of The Precede-Proceed Model (PPM). It aims to develop a diabetes self-care management strategy targeted at both older patients and healthcare professionals, with a view to limiting the impact of the disease and improving health-related quality of life for this group. Phase 1 of the work is to conduct a systematic review to assess the prevalence of type 2 diabetes among older people in African countries. Phase 2 aims to conduct a systematic review to evaluate the effectiveness of the existing self-

management interventions in diabetes, designed for older people in primary care settings. Phase 3 will be an explorative, descriptive and analytic study regarding older patients' needs, understanding and experiences of diabetes self-care management provided by community health centres. A systemic review of the literature on the prevalence of type 2 diabetes in Africa between 2000 and 2013 was performed and accepted for publication in *The Lancet*.

### **PROGRESS IN 2014**

**Study Phase 1:** Assessing the quality of life among South African older adults with diabetes using data from the *Study on global AGEing and adult health (SAGE)*. Permission for use of the data has been received by WHO (SAGE), the data has been managed and cleaned and an analysis plan has been developed.

**Study Phase 2:** A comprehensive literature search of databases was undertaken using an African search filter to identify type 2 diabetes mellitus prevalence studies published from 2000 to 2013. Of a total of 1 448 citations, 39 studies in 14 350 individuals met the inclusion criteria. The overall prevalence was 14.1% and was higher in the studies based on the oral glucose tolerance test 24.0% than those using fasting blood glucose criteria 10.5%,  $p < 0.001$ ; in non-. STEPS 16.4% than STEPS studies 10.4%,  $p = 0.042$ ; and in urban 21.0% vs. rural settings 10.5%,  $p = 0.003$ . This data indicates that it is time for diabetes prevention strategies to be put in place and a collaborative initiative between key international and national

## Capacity development and research training

diabetes and geriatric organisations developed to enhance diabetes care for older people in Africa and worldwide. The review protocol was published in June 2014. The manuscript review findings have been submitted for publication.

**Study Phase 3A:** Effectiveness of community-based peer- and non-professional health worker-led diabetes self-management programmes (COMP-DSMP) for improving clinical outcomes and quality of life of adults with diabetes in primary care settings in low- and middle-income countries (LMIC): A systematic review. The review protocol has been submitted and accepted for publication.

### PHD STUDENT: LUNGISWA TSOLEKILE (SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF THE WESTERN CAPE)

► **Thesis topic:** The use of community health workers to improve chronic disease care (see Project 5)

**Supervisors:** **Professor Thandi Puoane** and **Professor Helen Schneider** (University of the Western Cape)

#### SUMMARY

The details of the project are described above under Project 5.

#### PROGRESS 2014

Data collection on the second project has been completed and a draft manuscript has been prepared.



Lungiswa Tsoklekile

### PHD STUDENT: BEATRICE NOJILANA (SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF THE WESTERN CAPE)

► **Thesis topic:** Policy approaches on tobacco use and diet for prevention of chronic non-communicable diseases: The role of population-based data

**Supervisors:** **Professor Thandi Puoane** (University of the Western Cape) and **Professor Debbie Bradshaw** (Medical Research Council)

#### SUMMARY

The study aims to explore the role of population-based data in supporting environmental and policy approaches to prevent chronic non-communicable

diseases. It will involve a situational analysis of population-wide interventions; an assessment of the impact of tobacco control on the prevalence of smoking and tobacco-related mortality and a comparison of environmental aspects and behaviours around smoking and diet in an urban and rural setting, to assess the potential for population-wide prevention of chronic NCDs.

A situational analysis was conducted and included developing a more detailed proposal to interview people involved in the development or implementation of population-wide approaches to explore barriers and experiences. Trends in tobacco-related mortality have been explored. The student has completed a postgraduate course in qualitative methods at Stellenbosch University and has conducted qualitative interviews with policymakers and NCD programme managers in the provinces of the Eastern Cape and the Western Cape.

### PROGRESS IN 2014

Analyses and thesis writing is in progress.

The student has completed the first and second components of analysis of the data. The first component includes the qualitative analysis of policymakers in Eastern Cape and Western Cape. The second component is the secondary analysis of Statistics South Africa (Stats SA) data to investigate the impact of tobacco control policy in South Africa. Chapters one to three of the thesis have been drafted.



### PHD STUDENT: ZELRA MALAN (DEPARTMENT OF FAMILY MEDICINE, UNIVERSITY OF STELLENBOSCH)

- **Thesis topic:** The development, implementation and evaluation of a training intervention for primary healthcare providers on brief behaviour change counselling (BBCC) and assessment of the provider's competency in delivering this counselling intervention (see Project 4)

**Supervisors:** **Professor Bob Mash** (Department of Family Medicine and Primary Care, University of Stellenbosch) and **Dr Katherine Murphy** (CDIA, University of Cape Town)

### SUMMARY

This study aims to determine whether brief behavioural change counselling interventions, based on best

## Capacity development and research training

practice for smoking cessation, may be applied to a broader range of risk factors that are associated with non-communicable diseases. A training manual and course on brief behaviour change counselling for NCD risk factors were developed and a situational analysis of the current training curricula of healthcare workers in SA was conducted. A tool to assess the competency of healthcare workers in delivering the BBCC was developed and validated. Training has been delivered to a group of family medicine registrars and nurses. The impact of the training intervention on the counselling behaviour of these healthcare providers immediately after training and six weeks later has been evaluated.

### PROGRESS IN 2013

The first of four papers for the PhD were submitted for publication. The additional papers are being developed and involve the design, development and implementation of the training interventions; the data on the measurement of the efficacy of the intervention and the evaluation of the degree to which the training was implemented in the trainee's actual clinical practice; and the attitudes of the trainees towards the training after the intervention was completed. The training course, eight hours in duration, has been registered as a short course at the University of Stellenbosch and will be offered to students in the future.

### PROGRESS IN 2014

The final data collection and analyses have been completed. Initial results suggest that primary care providers (nurses and doctors) did significantly change their counselling in clinical practice as a result of the

training, although they continued to struggle with various barriers to implementation. The research student also offered training in brief behaviour change counselling and motivational interviewing as short courses at Stellenbosch University and was invited to present the course in Namibia and Botswana. The training intervention has been incorporated into the postgraduate and undergraduate curricula of family medicine at Stellenbosch University. Dr Malan has presented her work in Brazil, Botswana and Namibia and led the training of primary healthcare providers in these countries. The researcher is doing her PhD by publication. The first two articles have been accepted for publication, a third article has been submitted to *Patient Education and Counselling* and a fourth article is in the final draft stage.

### DRPH STUDENT: SHAFIKA ABRAHAMS-GESSEL (BOSTON UNIVERSITY, USA – SEE PROJECT 7)

- **Dissertation title:** An examination of the ability of community health workers to effectively conduct community-based screening for cardiovascular disease in South Africa, Guatemala and Mexico  
**Supervisors:** Professor Deborah Bowen (Chair of the Department of Community Health Sciences, Boston University School of Public Health, USA); Dr Thomas Gaziano (Brigham and Women's Hospital, Harvard School of Public Health, USA); Dr Matthew Fox (Department of International Health, Boston University School of Public Health, USA); Dr Judith Bernstein (Community Health Sciences Department, Boston University School of Public Health, USA)

## SUMMARY

This study aims to assess the training and experiences of community health workers (CHWs) in the use of a non-invasive risk screening tool for cardiovascular disease (CVD) in the community setting as described in project 2. The study is being conducted in four countries – South Africa, Bangladesh, Guatemala and on the USA/Mexico border. The following will be assessed: the impact of cultural norms related to weight; perceptions of the roles of CHWs in community and healthcare settings; the training materials, as well as challenges and opportunities for scaling up the training and use of the risk screening tool, as well as its impact on policy related to integrating prevention of CVD programmes into the primary care setting. In 2011, the Doctoral Committee accepted the protocol and the student registered. The training manuals were developed thereafter. The student has completed the data collection for her dissertation. Qualitative analyses of CHW focus groups and key informant interviews are complete. These analyses investigate the CHWs' experiences of the training, fieldwork and interactions with study and clinic staff. Additionally, assessments were made of the field supervisors' experiences working with the CHWs in the trial and the issues related to 1) integrating CHWs into primary care settings and 2) scaling up this kind of CHW-led intervention. The qualitative assessments were conducted in South Africa, Mexico and Guatemala.

## PROGRESS 2014

The student has co-authored four publications reporting on the outcomes of the aims of the CHW Supplemental Study co-ordinated through CDIA/UCT and is preparing her doctoral dissertation for submission and oral defence in 2015.

## PHD STUDENT: DR SAM SURKA

► **Dr Surka** has successfully applied for a four-year MRC Clinician Researcher Programme that has allowed him to register in the Department of Medicine at the University of Cape Town as a PhD student.

**Thesis topic:** Investigating the role of mobile phone interventions in improving glycaemic control in young adults with diabetes in low resource settings

**Supervisor: Professor Naomi Levitt**

## PROGRESS IN 2014

The planning of the student's PhD work has entailed extensive reading and consultations. It is anticipated that the final protocol and PhD topic will be finalised in 2015.

## MMED STUDENT (FAM MED): DR MICHAEL PATHER, UNIVERSITY OF STELLENBOSCH

► **Thesis topic:** Bridging the gap between clinical research evidence and practice: Implementing the South African National Evidence-Based Asthma Guideline in private and public practice in the Cape Metropole

**Supervisor: Professor Bob Mash**

## PROGRESS IN 2014

Improving the quality of primary care is a national priority and bridging the gap between research evidence and implementation in practice is a key issue. This study used mixed methods, including participatory action research, in the Cape Town primary care services, to implement an asthma guideline. Baseline quality of care was poor and improved significantly during the study. Interactive training workshops, group patient educational materials and asthma self-management plans were found to be useful. A stepwise model for the development, contextualisation, dissemination, implementation and evaluation of guidelines in the setting was created and likely role players, barriers and enablers identified.

Dr Pather was invited by CDIA to present his doctoral work in Washington at the network meeting. During 2014 he completed his thesis and it was submitted for examination.

## MASTER OF PUBLIC HEALTH STUDENT: ENOCK HAVYARIMANA (SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF CAPE TOWN)

- **Thesis Topic:** Variation in blood pressure and its association with outdoor temperature among adults with hypertension in a primary care setting in South Africa

**Supervisor:** Professor Naomi Levitt (Division of Diabetic Medicine and Endocrinology, Department of Medicine, UCT)

**Co-supervisor:** Dr Kirsty Bobrow (Division of Medical Science, Department of Primary Health Care, Oxford University, UK)

## SUMMARY

Observational studies from European and Asian countries have shown a seasonal variation in blood pressure in both the general and hypertensive population. Evidence shows this association may be attributable to temperature variation. To our knowledge, there are no published studies from South Africa reporting the relationship between outdoor temperature and blood pressure. The aim of the study is to describe the association between outdoor temperature and blood pressure in a South African setting and further assess the strength of the association and its clinical relevance.

The study makes use of blood pressure data of participants screened for eligibility (n=2 558) in the SMS-text Adherence Support (StAR) trial study and the weather data from the South African weather services (SAWS). Briefly, the StAR study is a randomised three-arm open parallel group trial evaluating the effects of a structured programme of hypertension treatment adherence support, delivered through either informational or interactive SMS-text messages on blood pressure at 12 months, as compared to usual care.

A multiple linear regression method will be used to model the association between temperature and blood pressure in the presence and absence of potential confounders. The study makes use of a hypothesised model; all the variables selected will be tested for any violation of assumption for a multiple linear regression model.

## PROGRESS REPORT 2014

An answerable research question was set. Background research on the relationship between seasonality and temperature variation and blood pressure was established. Extraction of data from studies reporting the effect of temperature on blood pressure was summarised in tables. A protocol was put together

and contact of relevant sources of data was achieved. Access to temperature and humidity data from the South African weather services was achieved. The project has finalised the protocol and awaits ethical approval from the UCT Human Research Ethics Committee.

**MMED STUDENTS (FAM MED): DR COBUS VOS AND DR ABIGAIL UGOAGWU (DEPARTMENT OF FAMILY MEDICINE, UNIVERSITY OF STELLENBOSCH)**

- **Theses topic:** Evaluation of point of care testing for HbA1c in primary care
- Supervisors:** Professor Bob Mash and Professor Rajiv Erasmus, University of Stellenbosch

**PROGRESS IN 2014**

The details of the project are described above in the third new project started in 2014. The clinical data was collected from the patients' medical records. At the end of the 12-month period, a focus group interview explored the health workers' experience of using the POC test. Data was also collected from a register on the quality of testing. Incremental costs were measured based on the additional staff time and resources required. Data is currently being analysed.



# CDIA MEMBERS' PARTICIPATION IN POLICY DEVELOPMENT AND INTERACTION WITH NGO'S AND THE COMMUNITY

A number of CDIA members were invited to give presentations or attend talks at the NDOH/WHO consultative meeting in September 2014 to advise the national Department of Health (NDOH) on how to monitor the progress made to attain the 10 NCD targets for South Africa, which were identified in 2011 at the SA Summit on NCDs.



UWC School of Public Health

**Professor Naomi Levitt's** (UCT) role as a leading NCD and diabetes expert is evident in the invitation extended to her by the WHO to be a temporary consultant for an initiative to develop WHO guidelines for The management of diabetes mellitus with insulin in low resource settings. She was also invited to join the Vitality Institute Screening Advisory Board.

**Professor Debbie Bradshaw** (MRC) is a member of the Health Data Advisory and Co-ordination Committee that is advising the NDOH on improving the national health information system and monitoring progress on the Negotiated Service Delivery Agreement undertaken by the Minister of Health.

The Western Cape Provincial Department of Health is revising its policy on chronic care under the leadership of **Unita van Vuuren**. **Professor Bob Mash** has been giving feedback and support to Ms van Vuuren in the development of this new policy, which explores an approach to all chronic conditions.

The national Department of Health requested **Professor Bob Mash** write a policy brief on patient education and counselling, based on the work CDIA has performed on group diabetes education and brief behaviour change counselling. They are trying to develop a national policy on improving adherence to management of chronic conditions.

**Professors Naomi Levitt and Bob Mash** attended a colloquium on NCDs hosted by Pretoria University. This provided an opportunity for CDIA to share its work with researchers in Gauteng and to hear what researchers are busy with in that province.

The CDIA was approached by the Chronic Disease Foundation for assistance with the design and evaluation of a community-orientated primary care project in the Avian Park community in the Cape winelands. The project partners included Novartis, Vodacom, IBM and Emerging Market Healthcare Ltd (EMC). The project intends to establish a focus on assessing cardiovascular risk among local community health workers, to provide them with information technology to record household data and to link them to primary care providers in either the private or public sectors. **Professors Mash, Steyn and Levitt** have been advising the project, which should start in 2015.

**Professor Vicki Lambert** was the lead investigator for CDIA, along with other CDIA network members, for the 2014 Healthy Active Kids South Africa Report Cards, the third in a series, which serves to benchmark healthy lifestyle behaviours in children and adolescents in South Africa. The current report card formed part of a Global Comparative Matrix, presented at the Global Summit on Physical Activity in Children in Toronto 2014. (<http://www.ssisa.com/articles/exercise/healthy-active-kids-south-africa/>)

**Associate Professor Lara Fairall** (UCT) has been the key person in working with the NDOH and some of the provincial health departments to initiate the roll-out of the modified 'Primary Care 101' (now called 'PACT') to community health centres across the country. This

group has also started working on a similar package of clinical management for children.

**Professor Vicki Lambert** (UCT) and **Professor Thandi Puoane** (UWC) are members of the Obesity Task Force for the Department of Health. **Professor Krisela Steyn** worked closely with the Heart and Stroke Foundation to initiate the public education programme on salt reduction. This programme is funded in part by the NDOH and was launched in September 2014. **Professor Lambert** advises the NDOH on ongoing surveillance concerning physical activity for NCD prevention. She also plays a leading role in the African Physical Activity Network (AFPAN). She has served on the executive board of Agita Mundo and in April 2014, became the elected chairperson of this global advocacy initiative for physical activity for health.

The ichange4health training manual and material that **Dr Katherine Murphy** developed for health workers has been incorporated into Discovery's Vitality Programme's training videos for their coaches at gyms. She also contributed a module on brief behaviour change counselling to the Vitality Institute's Wellness online programme.

The provincial DOH in the Western Cape formed a close collaboration with some of the CDIA network members in 2014. A committee with members of the DOH and CDIA has been formed to function as a forum where research results and policy reformulation can be discussed. **Professor Naomi Levitt** and **Professor Bob Mash** advise the provincial DOH on their DLECA programme in the management of diabetes.

**Professor Vicki Lambert** is the outgoing chairperson of the African Physical Activity Network (AFPAN), after

## CDIA members' participation in policy development and interaction with NGO's and the community

convening the first CDC/IUHPE International Course for Physical Activity and Health in the African region in 2007 in Cape Town. AFPAN now boasts over 200 members, representing more than eight countries, with a website and a quarterly newsletter, providing the impetus for regional research collaboration. Members of AFPAN from seven countries are currently collaborating on a study, adapting measures of the walkability of the built environment in urban African settings, funded through the International Physical Activity and the Environment Network. She has served on the executive board of Agita Mundo, and in April 2014, became the elected chairperson of this global advocacy initiative for physical activity for health. These factors have contributed to her recent invitation to present a keynote address at the bi-annual International Congress on PA and Public Health, in Brazil in April 2014, on PA and Health In Transition: A Global South Lens. **Professor Lambert** is an executive board member of the International Society for Physical Activity and Health (ISPAH) until end 2016.

**Dr Catherine Draper** provided the leadership in a successful bid for the 2016 International Society of Behavioural Nutrition and Physical Activity, to be held in Cape Town at the CTICC. This annual meeting brings together researchers involved in cutting-edge science, underpinning behaviour change, with a particular emphasis on nutrition and physical activity.

**Dr Lisa Micklesfield**, along with **Professor Shane Norris**, was responsible for securing the bid for Cape Town for the conference on Developmental Origins of Health and Disease in 2015.

**Dr Tom Gaziano** was invited to present a course titled Clinical Effectiveness: Implementing policies in cardiovascular prevention at the Institute of Clinical and Health Effectiveness, Southern Cone American Centre Of Excellence Of Cardiovascular Health, in Buenos Aires, Argentina in 2014. He was also invited to present papers on Evaluating the cost-effectiveness of the polypill, CVD prevention: what is behind the screen? and What is the population at CVD risk: using the US risk calculator at three international conferences.

**Professor Thandi Puoane** is a member of the national Department of Health's task force on obesity. She is also part of the Centre of Excellence Consortium (funded by the NRF) working on influencing the development of policies that will lead to changes in the food environment.

CDIA members' participation in policy development and interaction  
with NGO's and the community



# CDIA FUNDERS IN 2014

We would like to acknowledge our funders. Without their support, NCDs would still constitute the neglected area of health research.

## **DISCOVERY FUND**

Total funding amounts to R2 million for one year.

Funding cycle: 1 July 2014 to 30 June 2015

## **NATIONAL HEART, LUNG AND BLOOD INSTITUTE OF THE NIH, USA**

Total funding amounts to US\$2 million over five years. It is a pay and claim contract.

Funding cycle: 8 June 2009 to 7 June 2014

Supplementary funding of \$498 916 shared with Guatemala, Mexican American Borders and Bangladesh centres of excellence on a pay and claim contractual basis.

Funding cycle: July 2011 to June 2014

## **MEDTRONICS FOUNDATION**

Total funding amounts to US\$300 000 over two years.

Funding cycle: March 2011 to February 2013, extended until May 2014

## **OXFORD UNIVERSITY: A SUBCONTRACT OF A WELCOME TRUST FUNDED PROJECT**

Total funding amounts to GBP 168403

Funding cycle: February 2012 - June 2014

## **GLOBAL EVIDENCE SYNTHESIS INITIATIVE (GESI)**

Total funding amounts to GBP 59 800 over two years for C3 project of University of Stellenbosch and Medical Research Council, with CDIA.

Funding cycle: July 2013 to June 2014

## **DEPARTMENT OF MEDICINE AND FACULTY OF HEALTH SCIENCES, UNIVERSITY OF CAPE TOWN**

Research facilities and accommodation for CDIA Directorate office.



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# INCOME AND EXPENDITURE STATEMENT

January to December (Unaudited)

	NOTE	2014	2013
<b>Income</b>		<b>11 461 773.03</b>	<b>9 194 838.76</b>
Grants - Restricted	2	8 833 907.89	9 028 293.84
Grants - Unrestricted	2	2 092 482.80	-
Net Financing Income (Interest received from investments)	3	535 382.34	166 544.92
<b>Expenditure</b>		<b>11 452 233.88</b>	<b>9 965 695.77</b>
Personnel		1 764 887.65	4 652 634.15
Travel		377 571.96	376 544.85
Operating costs and supplies		1 724 150.70	995 996.43
Postgraduate bursaries		408 902.92	558 072.00
Subcontracts		7 176 720.65	3 382 448.34
<i>Lung Institute</i>		1 495 523.66	948 241.45
<i>Brigham Women's Hospital</i>		5 063 190.20	1 863 756.67
<i>CHW Projects</i>		618 006.80	570 450.22
<b>Surplus(Overspent)</b>		<b>9 539.15</b>	<b>(770 857.01)</b>
Capital invested	4	3 416 031.87	2 928 806.24
<b>Closing Balances</b>		<b>3 425 571.02</b>	<b>2 157 949.23</b>

# NOTES

## 1. **Basis of Accounting**

The Income and Expenditure Statement was drawn up based on the cash basis of accounting.

### 1.2 **Exchange Rate**

The exchange rate used to convert United States Dollars to South African rands is the average weighted exchange rate of the ruling exchange rate on the dates that the funds were received by the recipient.

## 2 **Grants Restricted/Unrestricted**

**Grants restricted** represent expenditure incurred on projects for which there are commitments from funders, including funding not yet received by year end. **Grants unrestricted** represent funding received in advance of expenditure for operational costs and bursaries.

## 3. **Net Financing Income**

Interest received from investments.

## 4. **Investment**

Unrestricted funding invested through UCT, receiving a market-related interest rate.

Cover image: Australian Aid Photolibrary



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