



# FINAL REPORT

OF THE  
PANEL FOR THE  
2017 SCIENCE,  
ENGINEERING AND  
TECHNOLOGY  
INSTITUTION (SETI)  
REVIEW



## TO: THE MINISTER OF HEALTH AND THE MINISTER OF SCIENCE AND TECHNOLOGY, THE DIRECTORS-GENERAL OF HEALTH AND OF SCIENCE AND TECHNOLOGY, AND THE BOARD CHAIRPERSON AND PRESIDENT OF THE SOUTH AFRICAN MEDICAL RESEARCH COUNCIL

We are pleased to submit our Review Report to you on completion of our work, performed as per the general specifications in our briefing documents. It must be understood that the Review is necessarily incomplete because the available time has been limited and the scope of SAMRC activities is far larger than was anticipated. We have concentrated on high-level analysis of key documentary materials and the insights we could muster from the large number of grouped and individual interviews we conducted between 8 and 12 May 2017.

Our approach has been to identify problem areas in the positioning of the SAMRC in the National System of Innovation, SAMRC governance, funding and operational issues, building the next generation of health researchers, and looking at selected comparator institutions in other countries. We have sought, wherever possible, to suggest and recommend solutions to problematic issues as we identified and perceived them. We sincerely hope that this will bear fruit in terms of future SAMRC functioning and the execution of its mandate.

We have regrettably been unable to review the work of individual intramural or extramural units in any detail. Such reviews should in any case take place outside the purview of the SETI review system because there would otherwise not be space to deal effectively with the 'big issues' concerning the SAMRC as a major research organisation.

This Review has come at a critical time when a number of key decisions will be made in relation to the SAMRC. A new President must be appointed soon, amendments to the 1991 MRC Act are long overdue, and a new statutory institution, the National Public Health Institutes of South Africa (NAPHISA), may soon be established, creating an urgent agenda for rationalising the work of both organisations.

The SAMRC is subject to governance rules common to all research/science councils, originating in the cabinet-approved 'Strategic Management Model' created by the Department of Science and Technology for these public entities. At the same time, and within the same policy framework, it is a sectoral body resorting for Parliamentary reporting and funding under the National Department of Health. Because of this dual model, the current re-thinking by the DST of the basic model of 'research/science' councils has had to be taken into account in our Review and its recommendations.

Our thinking in this Review has been based on the WHO-pioneered adoption of a national 'research for health' model, in which research-derived outputs from all quarters are translated into improved health at a national level. We have also been mindful of the need in the health sector for enhanced innovation and a role in a more inclusive national knowledge economy.

The dual role played by the SAMRC needs to be reflected in a new SAMRC Act as soon as possible, together with many of the recommended measures we have proposed in this Report.

We have made motivated recommendations for improved SAMRC governance and a more internally consultative environment, re-balancing of the SAMRC's resource allocation model, sharpening of the SAMRC's mandate, improvement of the information conveyed by output indicators, promotion of clinical research for improved health care, urgent attention to transformation, and many other suggestions and recommendations.

The Panel comprised six very experienced members, four from South Africa, one from Switzerland and one from the USA. As chairperson, I insisted on all panellists applying their minds to the Review as personal viewpoints, aiming wherever possible to reach a consensus.

We wish to thank SAMRC president Professor Glenda Gray, and Dr Marlon Cerf and their staff for the able organisation of the contact review process, the provision of materials and cordial cooperation at all times.

Dr Alpa Somaiya, who was tasked to assist in note-taking and drafting during our interviews and in the production of the Review Report, is warmly thanked for her services.

Finally, I must thank my fellow panellists for their hard work and persistent commitment to this arduous process.

**Wieland Gevers**

SAMRC SETI REVIEW PANEL CHAIRPERSON  
August 2017

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# EXECUTIVE SUMMARY

The 'terms of reference' for the 2017 SETI Review of the South African Medical Research Council (SAMRC) were prepared by the National Department of Health (NDOH). They required the Review Panel to answer a number of questions using assembled evidence and a coherent collective view.

The Review Panel deliberated on the terms of reference and decided to re-arrange the questions in order to facilitate its work and enable a coherent Report to be drafted. The connected sections were then assembled to produce the chapters of this Report so that all the questions were eventually answered, although not in their original order.

The Review process included extensive document review, including the MRC Act No. 58 of 1991, the report on the 2010 SETI Review of the SAMRC, the 2011 National Health Summit Report, the report on the 2014 External Review of the SAMRC, the SAMRC Annual Performance Plan 2016/2017, the SAMRC Research Highlights 2015, the SAMRC Strategic Plan 2015/16–2019/20, and the SAMRC Annual Report 2015/16.

A full programme of interviews was carried out between 8 and 12 May 2017. It was unfortunately not possible to conduct site visits because of time and logistic constraints. A number of interviews were conducted by the chairperson after the official programme, at the request of the other panellists.

The Review Panel members were Professor H Coovadia, Professor W Gevers (chairperson), Mr F G Handley, Professor C IJsselmuiden, Ms G Loots, and Professor N J Mekwa. Dr Alpa Somaiya assisted the Panel with recording the interviews and drafting the Report.

## THE FUNCTIONING AND POSITIONING OF THE SAMRC UP TO THE PRESENT TIME

The Review Panel became aware of a considerable degree of preoccupation, in national policy terms, with the positioning of the research/science councils in South Africa's drive to use science, technology and innovation (STI) in a systemic and coordinated way for inclusive national development. Thus, the Minister of Science and Technology set up a high-level review team to examine the institutional landscape of the STI system, which delivered its report in early 2017. Amongst its main findings were highly negative data on the relative lack of

productivity (publications and high-level human capital), cost-effectiveness and innovation in the research/science councils when compared with similar university-based activities. The Reviewers' vision for the STI institutions was that their operations should be brought closer to the needs of communities; they should evince a strong problem-solving orientation; there should be continuous prioritisation and re-prioritisation of the innovation agenda; continuous foresight should be exercised with respect to the basic and applied sciences; and the aspiration should be for global excellence and innovation competitiveness. The report goes on to recommend that a new, over-arching policy framework, including a regulatory policy, should be developed for the STI institutions as to their purpose, functions and governance; that their individual mandates be reviewed and revised; that their efficiency and cost-effectiveness be enhanced; and that the system should be expanded by new types of STI institutions such as research institutes, either stand-alone or virtual, across different participating organisations, including universities.

In these circumstances, it is evident that the 2017 SETI Review Panel for the SAMRC cannot be very sure of the national policy framework in which its recommendations will be considered, or taken up or not, as the case may be. While the Review Panel appreciates the general gist of the re-thinking of policy, and concurs with the fact that re-shaping the STI system for better functioning is important, it has a core conviction that the SAMRC should not abandon its commitment to basic and clinical research because these lead to enhanced applied research and innovation, and underpin South Africa's role as an African and global biomedical/public health research leader.

The Panel was uneasy with the terminology used to describe the SAMRC's role as a 'custodian of health research', and was in doubt as to whether the Council actually 'administered health research in South Africa' as claimed in virtually all its documents. The Panel questioned whether these are appropriate aspirations for the organisation. It considered instead that the SAMRC should aspire to play a national leadership role through 'stewardship' (implying responsible guidance). The Panel similarly agreed that one of the most important roles of the SAMRC was that of 'champion' of 'research for health' in the country. In this role, amongst other functions, the SAMRC should use its influence through the NDOH to press for larger 'research for health' allocations from the National Treasury, and leverage external funding for such research in South Africa, including from the private sector and international sources.

These two core mandates of the SAMRC should be built into the new SAMRC Act in order to provide clarity on the Council's role in its complex organisational setting.

It is evident that the 2004 policy of DST-reporting cross-cutting (CSIR and HSRC) and sectoral (SAMRC, Agricultural Research Council, Council for Geosciences, etc.) science/research councils created the situation that while the SAMRC was indeed concerned almost entirely with 'research for health', the DST-reporting research/science councils, by virtue of their cross-cutting nature, also undertake a substantial amount of research that fits this description, as do other entities in the national system of innovation. In essence, 'research for health' is a national strategy – improving health for research (of any nature). This means that any research that substantively influences health should be part of this 'national strategy'. So, by definition, 'research for health' in a country will be fragmented, i.e. it will have many different sectors that play a role, including the private sector, international collaborators and others.

The SAMRC still does not appear to have a close relationship with any of the other funding or research agencies, despite recent attempts by the current president to address this with convened round-tables and conferences, mainly in specific areas of focus rather than systemic coordination. There is undoubtedly still a situation of an uncoordinated 'research for health' sector in which there is possible duplication of effort in some areas and little likelihood of forging a 'differentiation logic' out of the mandates of the different organisations concerned. The DST is contributing significantly to joint funding, coordination and collaboration in specific innovation projects of the SAMRC, and the recent acceleration in this activity through SHIP is highly commended. The Panel nevertheless feels that the SAMRC, as 'steward and champion' of the national 'research for health' agenda, has an important role to play in convening well-prepared meetings across the relevant science/research councils in order to mutually elucidate the nature and purpose of current investments in 'research for health', leading to better coordination, collaboration and the exchange of ideas. Unproductive competition resulting from undifferentiated mandates should, as far as possible, be minimised or eliminated.

## National public health institutes of South Africa (NAPHISA)

An issue of importance for the Panel was the proposed 'National Public Health Institutes of South Africa' (NAPHISA), which according to a draft Bill now before Parliament, is to be established to better address South Africa's health needs. Specifically, the aim of NAPHISA will be to conduct disease and injury surveillance, and to

provide specialised public health interventions, training and relevant research directed towards the major health challenges affecting South Africans.

The Panel had a number of immediate concerns arising from the imminent establishment of NAPHISA, but especially in relation to the future of the SAMRC. Firstly, given the low GDP growth and South Africa's constrained national budget, the Panel felt that there could be risks for the future funding level of the SAMRC – one of the key recommendations of the previous 2010 SETI Review and the subsequent SAMRC revitalisation plan was, in fact, to increase the SAMRC budget – because delivering health services to the public is the main priority of the NDOH, and hence the overall research funding stream for the SAMRC in the budget of the NDOH may well be cut in order to enable NAPHISA to grow. Secondly, the question of mandate overlap arises because the SAMRC is already a leading contributor to national services in several of the proposed 'core NAPHISA functions', especially following the recent revitalisation programme.

The SAMRC, for example, already has established units in the same or closely related areas:

- The HIV Prevention Research Unit, and the Centre for Tuberculosis Research
- The Non-Communicable Diseases Research Unit, and external cancer centres
- The Violence, Injury and Peace Research Unit; and the Gender and Health Research Unit

The existing Burden of Disease Research Unit of the SAMRC also has purposes that are almost completely congruent with the proposed activities of NAPHISA.

The Panel believes that there are a number of key considerations, from the point of view of the SAMRC, that should be taken into account when deciding on the best course of action. The two public entities, occupying overlapping niches in the health system, would have to engage fully to investigate whether they can coexist in ways that respect their mandates, and maximise synergies and collaborations in present and future activities, preferably before the legislation is passed by parliament. With its research expertise on national health priorities and globally competitive 'research for health', the SAMRC is a mature national asset, and can support NAPHISA in many ways. This might involve moving (not necessarily physically) some SAMRC units to NAPHISA, while perhaps also placing some of the basic research activities of the NICD under the SAMRC (either as intramural or extramural units, or programmes.)

Role clarification in terms of research mandates between (agencies within) NAPHISA and the SAMRC will help external research and research-finance partners in

allocating funding for international collaborative research for health. The SAMRC and NAPHISA can coexist very well if the national 'research for health' paradigm is fully implemented so that the surveillance and general service mandate of NAPHISA is emphasised, including the identification of critical research questions, the answering of which can directly improve health practices, care and systems. The performance of prospective and responsive longer-term research would then be the mandated preserve of the SAMRC.

Initially, it was unclear to the Panel whether it should make recommendations for the SAMRC based on the imminent establishment of NAPHISA according to its draft Bill. After interviews with the Director-General of Health and a representative from the National Treasury, the Panel were informed that NAPHISA was indeed soon to be established, after due parliamentary processes, but that there would be little, if any, impact on the SAMRC's budget because the funding of the new Institute would come from a stream different to that of the SAMRC. It was also intimated that there would be plenty of downstream opportunities to construct working agreements between the two bodies.

### The crucial concept of 'research for health'

This Review was used as a forum to clarify the issue of the difference between 'health research' and 'research for health'. It is the Panel's view that the SAMRC, by virtue of its Act, is well-placed within a National System of Innovation (NSI) framework model in which it is statutorily mandated to lead in and perform a significant part of the 'health and medical research' (sic) performed in this country. This particular mandate is sufficiently important in the wide spectrum of 'research for health' (which makes up all the enquiries needed in many domains to promote the health of the whole population) to justify having a science/research council such as the SAMRC providing the stewardship and championship of its overall national development, embedded in an NSI in which the full spectrum of needed enquiry is covered by a variety of organisations and institutions well-networked through effective planning, coordination and collaboration.

The arrangements of the research/science councils since 2004 are unfortunately intrinsically antithetical to any attempt to treat the national 'research for health' agenda as a plannable, monitorable or steerable entity. The WHO has officially adopted 'research for health' as the term to be used in the context concerned. We believe that the crucial error made in 2004 was omitting measures that would ensure that the 'sectoral' councils would, in each case, be defined as the 'champions' and 'conveners' of overall 'research for X' across the national

system of innovation (NSI), and would be given the tools to ensure that this would be possible. From the system point of view, the new SAMRC Act should seek to codify the types of 'championing' and 'convening' powers discussed above, so that the shortcomings of the 2004 'policy' can be overcome by a new 'statute'.

### Priority setting

The SAMRC has a written strategic plan for the fiscal years 2015/16–2019/20. The organisation derived its four main goals and strategic objectives, in the main, from the MRC Act.

These have been consolidated here-to-date as follows:

1. Administer (sic) health research effectively and efficiently in South Africa
2. Lead the generation of new knowledge, and facilitate its translation into policies and practices to improve health
3. Support innovation and technology development to improve health
4. Build capacity for the long-term sustainability of the country's health research

While the strategy document provides detailed explanations of what each focus area entails, it is not clear how each of the objectives will be achieved. The report also does not describe in sufficient detail how the current set of research objectives will be 'migrated' into this new strategy, and how the strategy will be implemented.

The SAMRC has undoubtedly assisted in the re-focusing of the national research effort on the three inter-related areas identified as the nation's foremost health priorities: increasing the longevity of the population, addressing maternal and child mortality and morbidity, and fighting the pandemics of HIV and tuberculosis infection. While the favourable outcomes of these campaigns are reflected in all surveillance data, some of these are due to background improvements in the social determinants of health. Even so, we are nowhere close to where South Africa should be in terms of these key priorities.

The Panel noted that there was no mention of foresight into possible future research priorities in any of the documents it received. It was the view of the Panel that much of the research conducted by the SAMRC focuses on past and current problems facing South Africa. Priority setting for the organisation needs to include identification of future trends and anticipated challenges in order for the SAMRC to become the anticipatory lead and champion of research for health.



The NHRC has taken as its point of departure, for setting health research priorities and listing operative criteria for prioritisation, the following:

- The burden of disease (i.e. this is only one of the considerations)
- The cost-effectiveness of interventions aimed at reducing the burden of disease
- The availability of human and institutional resources for implementing an intervention at the level closest to the affected communities
- The health needs of vulnerable groups such as woman, the elderly, children and people with disabilities
- The health needs of communities

The Panel agrees with the NHRC in that the 'burden of disease and death' should not dominate priority setting; the tractability of the problem, the age and life-situation of affected individuals, and the uniqueness of the local affliction should also be built into the evaluation.

A document, drafted by the NHRC, entitled 'An Integrated National Strategic Framework for Health Research in South Africa' was considered by the Panel. The document is impressively coherent and detailed, but contains proposals that are likely to require extensive new public funding at a time of severe austerity due largely to the lack of economic growth in the country. Apart from the SAMRC-administered 'National Health Scholars Programme' (the funding of which is not being brought to scale as envisaged) and NAPHISA, for which a funding route appears to have been found, there is also the 'National Health Research Database' (NHRD). Two further new 'pillars' are envisaged, in the form of a 'National Priority Health Research Fund' and a 'National Health Research Observatory', and targets are also set for total funding of 'research for health'. All this represents a very significant increase in present expenditure. Acceptance and implementation of the NHRC's entire Integrated Strategic Framework would have positive significant implications for the SAMRC. The Review Panel is, however, cautious about the likelihood of this happening soon.

The Panel was generally satisfied with the approach of the SAMRC to ethics monitoring, both in respect of its own research programme and in its national role in helping the National Health Research Ethics Council carry out its functions and institutional committees meet their obligations.

### South-South collaboration

The view of the Panel is that the role of the SAMRC, within Africa as a whole, should be to help build up national

science/research councils to address health issues, and to highlight the fact that science and health research are essential for sustainable health and socio-economic development. The reason for this is that the SAMRC is well-established, steadily improving its capabilities and influence, and can improve continental health, economic self-sufficiency and competitiveness, which in turn are ultimately of direct benefit to South Africa as well.

### Selected recommendations

1. The SAMRC's lead role in 'research for health' in South Africa should be articulated and operationalised in terms of being a 'steward' and a 'champion' rather than a 'custodian' or 'administrator', and this should be captured in the 'mandate' section of the proposed new SAMRC Act.
2. The Council should be forthright in publicly reporting on its overall under-resourcing in terms of its present, but more especially its future, updated mandate. It should also point out the real requirements of priority programmes and projects, and the lack of coordination and the deep fragmentation in the 'research for health' system.
3. The SAMRC should use its convening and coordinating power to address the fragmentation of the 'research for health' domain in South Africa. This activity should occur at multiple levels:
  - a. Between the intramural and extramural units
  - b. Between the SAMRC and other science councils, and with the NDOH and DST
  - c. Within multi-stakeholder groups (including the private sector) to discuss and set agendas for research on key areas, for example, the NHI, common non-communicable diseases, mental health, etc.
4. The SAMRC should lead a process to take stock of 'research for health' across science/research councils to better understand gaps and identify opportunities for synergies maximally based on mandate differentiation and openness.
5. There needs to be a more formal, regular and substantive engagement between the NDOH and the SAMRC at the levels of both the Board chairperson and president.
6. A clear mandate that differentiates it from the SAMRC, as well as a definition of core areas of synergy, are required in order for NAPHISA to be sustainable and successful in meeting

the expectations that have led to its proposed establishment.

7. NAPHISA should focus primarily on public health, particularly primary health care and health systems, to better serve the public. Given the considerable overlap and duplication evident in the available documentation, the proposers/drafters of the NAPHISA Bill and SAMRC leadership should urgently hold a strategic meeting to:
  - a. establish the specific high-level roles of both organisations in the health system
  - b. identify the nature, productivity and systemic value of their present core research operations
  - c. harness synergies through agreed mechanisms
  - d. set up a collaborative model in which NAPHISA leads certain streams, the SAMRC leads other streams, and both have a distinct set of research activities.
8. A commission should be appointed, with the necessary resources and skills, to develop an implementation plan for NAPHISA and the SAMRC, taking into account the country's resources and needs, so that the two organisations have different research mandates and work alongside each other for the benefit of South Africa. This could entail structural and organisational changes to distribute units more appropriately in one or the other entity. This does not necessarily mean physical relocation, but should do if this is functionally essential. This could be an excellent opportunity to rationalise and improve health research in terms of collaborative efforts, also with other research organisations.
9. Research linkages with other organisations need to be significantly improved, including those with the Technology Innovation Agency, NHLS, HSRC, CSIR, NRF and the nascent NAPHISA.
10. The SAMRC should partner with the NDOH, the DST and foreign counterpart organisations in international collaborations to leverage funding, enhance research capacity in South Africa and further elevate the SAMRC's international status.

## GOVERNANCE ISSUES IN THE SAMRC

The MRC Act No. 58 of 1991 defines the objects of the SAMRC 'through research, development and technology transfer, to promote the improvement of the health and the quality of life of the population of the Republic and to perform other such functions as may be assigned to the MRC by or under this Act'. The Act further sets out the functions, powers and duties of the SAMRC.

### A new SAMRC Act – an urgent necessity

The advent of the NAPHISA Bill and the resulting requirement for a new NHLS Bill has meant that the SAMRC legislation has again had to be put on a 'back burner' by parliament because of pressure to consider other Bills at this time. It is clear that after 26 years and many changes in health sector organisational structures, capacity and need, the SAMRC Act is overdue for amendment or replacement. The Panel has included in this Report suggestions that could be considered for inclusion in legislation.

### The SAMRC Board

In terms of the SAMRC Act, the role of the Board should be focused on high-level guidance and oversight, more specifically to 'determine the policy and strategic objectives of the SAMRC, and generally oversee the performance of its functions, the exercise of its authorities and the execution of its duties'. The Board also appoints the Executive Management Committee (EMC), which is 'responsible for the management of the affairs of the organisation in accordance with the objects and policy of the SAMRC'. The Board clarified its intended relationship with the EMC in a resolution adopted at a special meeting on 7 September 2012, which states that 'the Board is, in general, responsible for strategic direction and oversight, and the president is responsible for day-to-day management of the MRC'. This is in keeping with the principles of good corporate governance as described, for example, in the King IV Report.

The Board is appointed by the Minister of Health after consultation with the NDOH. Neither the EMC nor the rest of the SAMRC and its stakeholders have a voice in the selection and appointment of Board members. The Panel believes that this arrangement weakens the Board's standing and scientific authority within the SAMRC community and outside it. The Panel suggests that fresh thinking may well be necessary in the context of a 'sectoral' science/research council such as the

SAMRC. We suggest that a target is set that ensures that at least half of the Board's members are accomplished and experienced researchers and research leaders (perhaps using the H-index as one significant measure, but extending beyond bibliometric ratings to include the holding of senior institutional posts involving research management or leadership, national associations, rankings and awards, honorary degrees, etc.). The other Board members who are not serving ex officio should have experience of organisational strategy, public law, research management, communications and the bio-economy.

### Unit Directors' Forum (UDF)

One of the recommendations of the 2010 SETI Review was the formation of an SAMRC senior leadership forum as a general research-consultative body within the organisation, involving, at minimum, all the directors of the intramural and extramural units, but also a minority of elected representatives from other tiers of researchers in the organisation. The idea has since been implemented by developing an SAMRC Unit Directors' Forum (UDF), comprising intramural and extramural unit directors, and other senior SAMRC researchers as members. The UDF was established by the vice-president, in consultation with the EMC, to further the organisation's goal of enhancing organisation-wide consultation, coordination and communication.

The Panel noted broad support for the retention and refinement of this Forum, but a common complaint was that the potential of the Forum was not being maximised. For example, the unit directors could play a vital role in steering the direction of the SAMRC and be involved in foresight for future planning.

The Panel understands that it cannot and should not 'think through' the details of a formal, institutional senior forum, but its advice is that the present UDF, while reflecting some real progress since 2010, is by no means a fully satisfactory solution of the senior communication problem in the SAMRC, specifically for a research enterprise that is very significantly also a 'steward' and 'champion' of 'research for health' in South Africa. One suggestion of the Panel is that concurrent cluster-type meetings could alternate annually with a general conference.

### Scientific Advisory Committee (SAC)

In 2014, one of the findings of the ad hoc external review of the SAMRC was that greater scientific input was required to support the president. In response to this recommendation, the SAMRC established a Scientific

Advisory Committee (SAC) in October 2015, its terms of reference being to advise the president and the Board on the direction, quality and likely outcomes of research being performed within the organisation, or with its major support. The SAC would make recommendations, but the decision-making responsibility would remain within the SAMRC.

Selected SAC members were invited through an open and targeted process, and were identified from a broad range of sources, both nationally and internationally, from scientific societies, academia, science councils, research organisations, policy makers and the public. The Panel received the impression that there was little faith amongst, at least some, unit directors in the SAC being able to adequately fulfil its mandate of providing high-level scientific input enabling the president and Board to substantiate 'dead-ends' or other problems, and make sound, well-informed decisions.

The Panel feels that the structure and function of the SAC needs to be re-visited. According to the terms of reference for the SAC, the Board initiates an evaluation of the SAC every three years, and will work with the president and chair to review the mandate, activities, terms of reference and relevance of the SAC to ensure that it meets the SAMRC's needs. The SAMRC retains the prerogative to disband the SAC following such a review.

### Selected recommendations

1. The revised SAMRC Act should contain provision for a balance between extensive and demonstrable research experience, mastery and vision on the one hand, and a mix of specific and well-proven skill-sets on the other when constituting a Board for this public entity. The ex officio membership should be extended to include the NDOH, DST, HSRC, CSIR and NAPHISA (once established). Provision should also be made for consultation with the president of the SAMRC before the list of Board members is finalised by using the legal phraseology 'after consultation with ...', which does not remove the prerogative of the Minister in making the appointments, but would ensure that s/he does so in full knowledge of the opinion of the SAMRC's president.
2. The amended Act should also specify how the SAMRC president is to be appointed, the minimum requirements and whether the president must be based in Cape Town. As to the requirements, the use of the word 'minimum' in this context should be focused not on restrictive 'external' features

but on the demonstrable potential for capable and visionary leadership of this particular organisation. Possession of a medical qualification should be considered a favourable feature of candidacy, but should not be an absolute requirement because the size of the competitive pool of candidates is more important than this criterion. The location of residence should also not be an absolute barrier, taking into account the current ease of travel and communication.

3. Special attention should be given in the amended SAMRC Act to the manner and extent that the SAMRC Board can delegate functions and powers to the president and the EMC in general. The Panel advises that operational micromanagement by the Board should be eliminated altogether. It is critically important that a Board, such as the one recommended above, can optimally exercise its key strategic and oversight functions.
4. A more formal arrangement of the present UDF should be developed along the lines of a 'senior forum' to assure productivity and benefit to the organisation, with a periodically elected chairperson (not an executive) and adequate administrative support. The aim should be to foster fully debated inputs into strategy making in the organisation. There could also be another 'forum' devoted to research presentations, consultations and collaboration possibilities. This could alternate annually between clustered meetings and general conferences. These groupings could include those from other organisations, forming national think tanks.
5. The Board should review the functioning of the SAC against its terms of reference to assess whether the Committee is best serving the SAMRC's needs. Additionally, the SAC may need a stronger mandate, process and structure because it does not seem to be functioning efficiently. The rotating chair seems to be problematic. The appointed chair should be a South African and should remain in position for the duration of his/her term. The Panel suggests that the president decides what she needs and moves towards an external advisory committee that will add significant value beyond the existing internal structures.

## OPERATIONAL ISSUES WITHIN THE SAMRC

### Funding

One of the changes of the revitalisation process was to redirect SAMRC funds to national priorities, in particular to focus the intramural units (of which half were closed) on the 'burden of disease', namely the leading causes of disability and mortality (measured by years of life lost and the number of deaths). This approach can be criticised for methodologically neglecting or underestimating some leading causes of prolonged morbidity that are not major direct causes of mortality (such as stunting in children, mental ill-health, including drug addiction and oral health, as well as the pervasive problem of common co-morbidities), potentially under-emphasising the importance of cross-cutting research to improve the health system.

It is significant to note that the retained intramural units were simultaneously given a new 'lease of life' and were to be subject to evidence-based renewal decisions every five years as is the case for extramural units. This has, however, raised the difficult question as to what the Council can do if an intramural unit underperforms in terms of such rigorous review. What is clearly non-negotiable is that the intramural units must be treated in the same way that extramural units are when it comes to quality and effectiveness in terms of their individual research mandates.

The SAMRC, as a guideline, has set a formula for allocating its baseline resources: 40% for intramural research, 40% for extramural research and 20% for administration. These funds are currently supposed to flow in a number of directions that are each partly intramural and partly extramural (the research units, eight research capacity-development programmes, and the activities clustered within the Grants, Innovation and Product Development Directorate (GIPD), namely the Self-Initiated Research Grants (SIRs), Newton Fund programmes, Grand Challenges South Africa, Strategic Research Initiatives, Platform and Specialist Scientific Services and Flagship Programmes, apart from the Strategic Health Innovation Partnerships (SHIP). It appears, however, that 40% of the SAMRC's budget is in fact allocated just to the intramural units and 40% is shared among all the other streams, of which, the intramural units are often also beneficiaries. This discrepancy needs urgent rectification in the Panel's view because the policy is quite explicit about at least 40% of the whole baseline budget going to extramural research.

Over the MTEF period (2016/17–2018/19), the SAMRC's annual budget is projected to contract at an average rate of 3.5% annually. This is a budget decrease of R108m from 2015/16–2018/19. The SAMRC's budget decreased by 3.6% from 2015/16–2016/17 due to a decrease in research contract funding in 2016/17. In 2017/18, the SAMRC's annual baseline budget will decrease by 5.2% due to a R50m cut in the Economic Competitiveness Support Package (ECSP) and in 2018/19, the baseline allocation further decreases by 4.8% mainly due to a R100m cut in the ECSP.

The issue of the overall baseline under-funding was raised repeatedly during the Panel's interviews. It is the strong view of the Panel that the SAMRC needs a much higher level of baseline funding to meet its research mandate.

### Intramural and extramural units

Extramural units are generally productive and cost-effective, as seen from the SAMRC's point of view. Funding for these units by the SAMRC is limited, and in most cases, represents only a small proportion of the overall funding that these extramural units receive in total. Despite this, the SAMRC funds appear to have several main roles: they are source of prestige and enable work continuity over many years, they are valuable for leveraging other funds, they fund essential positions that are often difficult to support through individual grants (such as research administration and technicians), and they provide funding for items that are not covered by other grants (it is the highly valued flexibility of the award that allows this). The current extramural units leverage between 2 and 50 times the funding contribution they receive from the SAMRC.

A consensus view emerged that a substantial proportion of the intramural units is underperforming. An indication of the degree of stasis at 'comfort levels' is the low level of communication and cooperation between members of intramural units who are working in areas that should lend themselves well to joint exploration. The Panel learnt that it was difficult to hire young and promising researchers because current 'permanent' post-holders were not leaving. Bringing in 'new blood' was a problem because it was generally difficult to establish additional posts, although the SAMRC does have several initiatives (see below) that are helping to address this problem. The Panel feels that the SAMRC should find ways to resolve these issues at the core policy level because the opportunity costs are huge of not being able to invest in strong intramural units and strategically establish new ones.

The difficulties related to performance are linked to the need for a community-wide acceptance of the criteria for good performance by a unit. A common theme emerging from the interviews with directors of both intramural and extramural units was that undue importance was attached to the number of peer-reviewed publications, their citations and especially the journal impact factors concerned, including the elevation of a small group of high-impact, multi-disciplinary journals to a distinctly favourable, even essential criterion. The interviewees agreed (as did the Panel) that the publication of 'high-impact' papers was a clear aspirational target that was accepted by the whole SAMRC research community, but that it was necessary for a more up-to-date view of these indicators to be taken. For example, it is now generally accepted that large numbers of citations over long periods to individual papers is a far more reliable indicator of impact than a journal impact factor; this also elevates H-indexes to a higher place in the range of criteria. In any case, journal impact factors should be expressed in field-specific terms because different fields of research have vastly different overall citation rates and therefore the impact factors of the best journals in the fields concerned are also different.

The Panel further feels that it is essential for there to be a broader assessment of quality in output reporting, and that the SAMRC should not just count and assess publication outputs. The successful supervision and graduation of postgraduate students is an important contribution – particularly with a focus on the research agenda – as is the translation of a research finding into improvement in patient care, or disease diagnosis and prevention.

### Procurement problems

The Panel was confronted by many complaints about logistical problems caused by compliance with the procurement regimen for public entities specified by the National Treasury. These included delays, inappropriate purchases and large costs, both absolutely and in terms of opportunity.

### Selected recommendations

1. When requesting additional funds or an increase in the baseline budget from the NDOH, the SAMRC should prepare coherent arguments, provide statistics and create case studies of impact, and demonstrate the cost of not doing the research.
2. All units, regardless of whether they are intramural or extramural, should undergo regular (we suggest 5-yearly) reviews undertaken by properly

constituted panels comprising eminent researchers in the relevant field of research. At the reviews, all units should be asked to present their strategic vision and projected outputs for the coming five years. These should be tailored to the context in which the units operate and the units should be held accountable for achieving these. Suggestions of consequences have been given, but ultimately, this must be an SAMRC-led process because of the legislation and goodwill of the staff involved.

3. Additional indicators, other than the number of papers published in journals with specified impact factors, should be included when reviewing the performance of units. Indicators, for example, should include H-indexes of senior unit authors, field-specific journal impact factors, article-level metrics as are being pervasively developed, student graduations at different levels, authoritative policy papers and similar, and outreach activities that show visible results. Locally relevant indicators need to be considered to focus on the specific mission of the SAMRC in helping to achieve South Africa's national health and development goals.
4. Thought might be given to changing the intramural research programme to a series of 'platforms', providing greater flexibility of management and rational use of resources. Alternatively, the more radical idea of establishing 'national research institutes' in key areas important for community development might be entertained.

## BUILDING THE NEXT GENERATION, ENHANCING CAPACITY AND TRANSFORMATION

The SAMRC endeavours, within its resource base, to provide the person-power to develop and perform high-quality and relevant health research in South Africa. The Council has a number of ongoing research and career support mechanisms, and continues to enter into new partnerships with local and international partners to bring in additional funding to support scientists at all stages of their careers.

### Scholarships

The majority of SAMRC funding in this category is currently provided to clinician PhDs and this is strongly supported by stakeholders who perceive that this meets

the country's urgent need to train more clinicians in research.

Due to the request by the Minister of Health that the SAMRC should aim to train 100 PhDs in a spectrum of clinical disciplines each year, the organisation has had to use its own funding intended for Masters students (an essential part of the human capital strategy) to augment the funding of PhDs in order to reach this target. The 'National Health Scholars Programme', funded by the private sector's 'Public Health Enhancement Fund' (PHEF) through the NDOH, is meant to be a major vehicle for this effort, but it is not being maintained according to plan.

The point was raised during the interviews that the reason why postdoctoral fellows are not being absorbed into the market as they should be, is that it is not only the high numbers of postdoctoral fellows entering the market that is the problem, but it is the questionable quality of the PhDs that is in question. The Panel considered this a point requiring further systemic investigation.

The SAMRC should consider more support for MD-PhD programmes of study in cases where universities are willing to make the necessary curriculum arrangements.

### Mid-career awards

Mid-career awards have been enthusiastically welcomed in the SAMRC system, although the Panel heard requests for the grants to be larger and for there to be more of them awarded each year. Providing support for mid-career scientists is good value for money because they are committed to research careers and the cost is lower than that for supporting scientists that are more senior.

### Self-initiated research grants (SIRs)

Self-initiated research grants (SIRs) support emerging and established researchers, usually with PhDs or equivalent clinical qualifications.

The Panel is of the opinion that the SIRs are one of the big problems in the continuing imbalance between the extramural and intramural research programmes. We strongly recommend at least a doubling, if not a trebling, of the annual quantum for SIRs, fair criterion-based pre-screening to eliminate poor proposals, and awards that make a real difference to the recipients. These grants are very cost-effective because applicants come with their own salaries, infrastructure, students and appropriate 'research ecology'. Efforts should also be made to increase participation in international programmes such as 'Rising Stars' and the 'Exploration' awards of the

Grand Challenges Programme of the Bill and Melinda Gates Foundation, etc.

### Historically disadvantaged institutions

As a Panel, we strongly endorse the importance of transforming the South African science system and achieving distributional justice. In addressing this, the SAMRC prioritises candidates from historically disadvantaged institutions (HDIs) for PhD scholarships, early- and mid-career awards and SIRs. The Panel notes, however, that over the past 20 years, the apartheid-era alignment of university and staff race has altered, and students from previously disadvantaged backgrounds are increasingly being drawn to established centres of excellence for higher degrees and postdoctoral research wherever these are found. Unfortunately, centres of health research excellence in HDIs are unusual, and so they lack the necessary resources and geographic location to build them up.

A recommendation of the 2014 external review of the SAMRC was that the organisation should work with HDIs to assist them to identify and overcome institutional impediments to the growth of research, and enable access to projects of world-class scientific endeavour (through direct funding or collaboration) within which capacity can be developed. The Panel wishes to congratulate the SAMRC for its recent steady and beginning-to-be-effective interventions at Fort Hare, Walter Sisulu and Zululand Universities, from which much has obviously been learnt. The SAMRC should seek a strategic partnership with the Department of Higher Education and Training (DHET), the South African Research Information and Management Association (SARIMA), and the DST for institutional research capacity building at HDIs to help leverage funds and external expertise

The SAMRC currently has a ring-fenced pool of funding for HDIs of R10m per annum. The Panel learnt that this would increase as the HDI development programme is extended. The organisation wanted to start the programme on a small scale because it wanted it to begin as a complete and sustainable development programme, and this has taken some time to implement. The Panel recommends that the HDI programme be taken to scale as soon as this is feasible.

### Transformation

The efforts that the SAMRC has made regarding transformation at the highest levels are informative. A particular need is succession planning. For example, when the vacant vice-president's role was advertised, no suitable candidates applied; the requirements laid down

by the Board were possibly too stringent and risk-averse. A basic principle of transformative recruiting is to ensure the largest possible pool of talented candidates of all backgrounds who could make a success of a particular position. In this context, there seems to be no place for largely outmoded thinking and artificial constraints in enabling the SAMRC to take the leap into a new future. The real requirements for leadership of the Council are a deep and demonstrable understanding of how good research is conducted and promoted, people and communication skills of a high order, integrity, and business/organisational skills.

To address this issue, the SAMRC has created four positions for deputy directors (capacity development positions) to fast-track suitable (high-potential) people for succession planning to replace unit directors who are about to retire. The SAMRC is currently in the position of developing more posts like these. (The aim is to recruit deputy directors for all intramural units from 2017 to 2021.) Senior transformation and capacity development have also been added to unit directors' agendas in order to speed up this process and ensure it happens on an organisational level, while there is also an implementation plan to increase research capacity from postdoctoral level and up.

### Expanding clinical research capacity

Clinical research falls squarely within the SAMRC's public mandate in South Africa and contributes to health care at all levels by identifying the causes of problems, facilitating diagnosis, improving the efficiency and effectiveness of care, and promoting good policy-making. It also supports the training of competent health professionals of all types, and contributes to global knowledge about locally as well as generally prevalent diseases in terms of prevention and treatment. It is a particular necessity in the light of the imminent implementation of the National Health Insurance (NHI) scheme.

We believe it is true to say that the future of clinical research in the country (a core endeavour in building an adequate health system for the population) depends to some extent on the SAMRC's ability to meet the requirement of the Minister of Health to fund 100 clinical PhDs per annum. To achieve this, the SAMRC will need to mobilise further support from the NDOH and the Public Health Enhancement Fund (PHEF), as well as more directly from industry, universities and external sources.

The existing clinical trial centres, mostly set up by researchers who have obtained large foreign grants, are places where funded research can be conducted and not where clinicians can be systematically and

broadly trained; they also do not seem to be adequately resourced. The SAMRC needs to enter into partnerships with the operators of the existing ad hoc clinical research/trials centres, and make business plans to enhance their capacity to train people and undertake a broader range of studies. This is unfinished business from the 2009 ASSAf Report on Clinical Research and the subsequent 2011 National Health Research Summit Report.

One of the main reasons for the decline in clinical research capacity is the cost involved. Clinicians' salaries have to be met in order to attract them away from practice and into research. One way to expand the clinical research capacity in the country would be for the SAMRC to put out a call to universities and hospitals asking for research proposals from registrars who are interested in conducting the research they need to perform in order to qualify as specialists.

### Clinical disciplines in distress: The special problem of the pathology disciplines and the NHLS

The inclusion of the 'academic' aspects of the pathology disciplines in the otherwise totally service-based NHLS problematically linked the fate of these core health research areas to the fee-for-service organisation required by its statute to break-even in terms of revenues against expenditures. Severe cash-flow problems have thus been associated with frozen academic posts, especially registrar posts, hindering the education and training of a new generation of specialists who could contribute to 'research for health' in key areas other than the already well-developed HIV and TB research programmes. In a recent graduation ceremony of the Colleges of Medicine of South Africa (COMSA), only a handful of specialists graduated in the pathology disciplines, compared with vastly greater numbers in most other clinical disciplines. It is evident that the inability of the NHLS to fund research on a significant scale from its 'trust' funds makes it necessary for the SAMRC to pay special attention to these disciplines, and to foster a balanced approach to the growth of capacity in the different sub-disciplines.

#### Selected recommendations

1. The SAMRC and its Board should observe the basic principle of transformative recruitment practice of reducing unjustifiable restrictive criteria to a minimum, thus enlarging candidate pools for truly competitive selection. This applies especially to leadership posts in the organisation.
2. The SAMRC should collaborate with other science organisations and the private sector to improve

postdoctoral job opportunities. Ideally, this should form the basis for a government-level strategy to create an environment conducive to research and for innovation to flourish.

3. The Panel is of the opinion that the SAMRC should become more involved in the initiative to expand the country's clinical research capacity, inter alia by increasing the value and prestige of self-initiated grants and by targeting salaried registrars required by their specialist registering authority to complete a research project of about six months duration. Existing clinical research centres should also be partnered to extend the range of their activities, which should include training and networking.
4. Research capacity in the pathology disciplines requires special attention from the SAMRC in order to avoid an irreversible situation of neglect arising from the problematic model of the service-dominated NHLS.

## BENCHMARKING AGAINST SIMILAR INSTITUTIONS

The Panel has tried to see whether the current policies and practices of the SAMRC could be improved by adopting ideas that have worked for some other national health-research funding bodies. These bodies were selected because they are based on the same type of institutional model used to set up and develop the SAMRC.

### United Kingdom (UK)

The UK has three complementary but significantly overlapping organisations promoting and funding health-related research: the Medical Research Council (MRC-UK), which is one of a cluster of public funding bodies falling under the new umbrella body UK Research and Innovation (UKRI), and through it, to the government department of Business, Skills and Universities; the National Institute for Health Research (NIHR), which is part of the National Health Service (NHS), reporting to the national and regional departments of health; and the independent Academy of Medical Sciences.

#### MRC-UK

Britain's Medical Research Council (MRC-UK) is dedicated to 'improving human health through world-class medical research'. The MRC-UK supports research across the biomedical and public health spectrum in all major areas of ill health.



The MRC-UK is governed by a council of about 14 members, which directs and oversees corporate policy and science strategy aimed at ensuring that the MRC-UK is effectively managed. Scientist members of the Council also chair specialist research boards on a number of priority areas of research (currently infections and immunity, molecular and cellular medicine, neurosciences and mental health, population and systems medicine, global health, and translational research), which are the primary project-funding agents in each of these domains, drawing on set budgets. A Training and Development Board similarly distributes funding for training medical scientists.

When stand-alone grant support is insufficient, the three main support mechanisms are the following:

- Institutes: Very long-term flexible multidisciplinary investments
- Units: More focused investments established for as long as needed to support a scientific need and/or deliver a research vision
- Centres: Build on existing MRC-UK and other support to add value and help establish a centre of excellence

The Medical Research Foundation is the MRC-UK's independently managed charity. It receives funds from the giving public to support medical research, training, public engagement and dissemination of knowledge. Since it was first established in 1920, the MRC-UK has been able to accept charitable bequests, endowments and donations from the public to contribute to the costs of the research that it undertakes.

### ***The National Institute for Health Research (NIHR)***

The NIHR was established in 2006 to transform research in the National Health Service (NHS). It claims to be a 'virtual' organisation, which means that although what it does and the research it funds are very real, it is not a corporation, legal entity or 'bricks and mortar' enterprise in the traditional sense. Rather, it is an overarching entity that collectively represents all publicly funded research in the NHS: 'the research arm of the NHS'.

The purposes of the NIHR are to transform research in the NHS, to increase the volume of applied health research for the benefit of patients and the public, to drive faster translation of basic science discoveries into tangible benefits, to develop and support the people

who conduct and contribute to applied health research, and to attract investment by the life sciences industry through its world-class facilities for health research.

The main areas of funding are treatment efficacy and mechanisms evaluation, health services and delivery research, health technology assessment, invention for innovation, public health research, research for patient benefit, and systematic reviews.

### ***The Academy of Medical Sciences, UK***

The UK's Academy of Medical Sciences (AMedSci) was established in 1998. Its objectives are to improve health through research and promote benefits for society from medical science, attempting to influence policy, link state and commercial health and research organisations, and encourage dialogue about the medical sciences. It occupies a dedicated headquarters building, which provides office space for its 25 members of staff, and has rooms for events and conferences. The Academy is active in the production of independent consensus reports on health research topics and related public policy. (A recently published forum report was issued jointly with the Academy of Science of South Africa on multi-morbidity trends and implications for health care.) These feed into the strategic thinking of the MRC-UK, the NIHR and the health departments.

### **Comment on the UK system**

The UK stands in second or third place worldwide in terms of the strength of its science and innovation system. Its health research support system is extraordinarily complex, diverse, and well-resourced and administered. (This becomes even more so if one takes into account the ample additional resources available to UK investigators from the EU, Wellcome Trust and the Royal Society.) The three public organisations described briefly above have markedly overlapping strategies and priorities despite their apparently distinct high-level mandates. This provides researchers with a wealth of options to seek and obtain funding for their work. The organisations are all forward-looking (extensive foresight activity) as well as results-orientated in the present (translation). The national depth of talent (extensively enriched by immigration) is so extensive that close-to-ideal peer review of proposals and outcomes, as well as due administrative process, can be achieved across the vast overall organisational landscape and activity spectrum.

## India

### *Indian Council for Medical Research (ICMR)*

The Indian Council of Medical Research (ICMR), New Delhi, the apex body in India for the formulation, coordination and promotion of biomedical research, is one of the oldest medical research bodies in the world.

The Governing Body of the Council is presided over by the Union Health Minister and comprises eminent scientists, public health experts, as well as elected members of parliament. It is assisted in scientific and technical matters by a Scientific Advisory Board (SAB), comprising eminent experts in different biomedical disciplines. The Board is the highest technical body that reviews the work of the ICMR (in its totality) and advises the ICMR on both short-term and long-term research policies, strategies, thrust areas of research, and so on. The Board, in turn, is assisted by a series of scientific advisory groups, scientific advisory committees, expert groups, task forces and steering committees that evaluate and monitor different research activities of the Council.

The Council promotes biomedical research in the country through intramural as well as extramural research. Over the decades, the base of extramural research, and also its strategies, have been expanded by the Council. However, the resource demands of the intramural programme continue to dwarf extramural commitments and there are continuing serious challenges associated with unproductive intramural units.

Each of the ICMR institutes/centres has a Scientific Advisory Committee (SAC), which is composed of experts (subject specialists) in the specific areas of research undertaken by the institute/centre concerned.

Intramural research is carried out currently through the Council's 33 research institutes/centres/units. These include:

- twenty-three mission-oriented national institutes located in different parts of India that address research on specific areas
- five regional medical research centres that focus on regional health problems, and also aim to strengthen or generate research capabilities in different geographic areas of the country
- five unit/centres.

Extramural research is promoted by the ICMR through centres for advanced research in different research areas around existing expertise and infrastructure in selected departments of medical colleges, universities and other non-ICMR research institutes. The ICMR also funds task force studies, which emphasise a time-bound, goal-oriented approach with clearly defined targets, specific time frames, standardised and uniform methodologies, and often a multi-centric structure.

The annual expenditure of the ICMR currently appears to be about USD100 million or about R1.35 billion. There has been much recent criticism in both parliament and the media regarding the low productivity of the ICMR as a whole, with only about 800 recognised journal publications per annum from all ICMR-affiliated researchers, very few patents approved or commercialised, and a perceived inability of the Council to point to any real benefit in public health or disease treatment that has arisen from its work.

### **Comment on the Indian system**

India has the second largest population in the world (approximately 1.1 billion) and is the seventh-largest economy. The SAMRC receives about R600 million per annum of public funds, about half of the ICMR's allocation, but the population is about 55 million and the size of South Africa's economy is much smaller. Without going into a detailed comparison of the three countries (UK, India and South Africa), one can conclude that the ICMR is severely underfunded in respect of its mandate. Against this, the absence of a system of rigorous, periodic external review of the entire organisation suggests that all is not well with the ICMR itself.

### **The Republic of the Philippines**

The Review Panel elected to describe the health research system of the Philippines because this country, of about 96.5 million people in South East Asia, has succeeded in setting up a unitary system of science and technology, in which 'research for health' is embedded without fragmentation, and without significant donor involvement or support.

The health delivery system resembles that in South Africa to some extent. There are an increasing number of private health providers and, as of 2009, 67.1% of health care came from private expenditures while 32.9% was from government. In 2013, total expenditures on the health sector was 3.8% of GDP, which is below the WHO target of 5%.

### **The Philippine Council for Health Research and Development, Department of Science and Technology, Republic of the Philippines**

The Philippine Council for Health Research and Development (PCHRD) is one of the three sectoral councils of the Department of Science and Technology (DOST). It is a forward-looking, partnership-based national body, responsible for coordinating and monitoring research activities in the country.

The PCHRD is mandated to perform the following functions:

- Formulate policies, plans, programmes, projects and strategies for science and technology development in health
- Programme and allocate government and external funds for R&D in health
- Monitor R&D projects that are 'research for health'
- Generate external funds for health research

The PCHRD funds research proposals that are aligned with the 'National Unified Health Research Agenda (NUHRA)', which is a national template for health research and development efforts, and guides the research sector on the research that addresses the most pressing health concerns of the country. NUHRA specifies the areas and topics that need to be addressed in the next five years, in line with global and national initiatives influencing the health sector.

#### **Comment on the Philippine system**

The Philippine Council for Health Research and Development appears to be successful in channelling large parts of the National Department of Health's budget for health research, as well as a significant part of the country's Department of Science and Technology budget for 'research for health'. It assists in performing periodic national priority reviews, which are aggregated into a single 'National Unified Health Research Agenda'. This is an effort by a national government, without intrusive donor interference, which has already existed for almost 20 years, is effective in what it does, is nationally accepted, and is very much embedded in the history of the nation in traditional health care and local research efforts, while not eschewing the collective knowledge base of the globalised modern world.

#### **Selected lessons of possible use to the SAMRC**

1. South Africa, in learning from others, must constantly seek ways of simplifying and reducing the human and material costs of possibly useful elements of 'research for health' systems in richer, much larger countries or better organised

countries, building on the good parts of what is already in place.

2. The SAMRC might want to borrow the idea of a dedicated charity to look at fund-raising for research directly targeting the public, or indirectly through the lottery and other possible sources in a country where philanthropy is in its infancy.
3. India has established a large number of 'national research institutes' which are distributed across the country and fall under that country's equivalent of the SAMRC. The size and inertia of this system, and its substantial demands on the available funding despite low productivity, has a bearing on some of the proposals currently emanating from the realisation that the South African research/science council system is under-performing and not dynamic enough – an institute system must be small and selective and be flexible in its design.
4. The successful model for deriving an agreed 'national unified health research agenda' of the Philippines could well be emulated by in a joint project of the SAMRC and the NHRC.

## **THE SAMRC – THE NEXT FIVE YEARS**

The Panel believes that the SAMRC deserves praise for the revitalisation effort that has been effective in many ways and is currently still underway. The history of the organisation, and its recent focus on scientific excellence and transformation, has assured its continuation as one of our most valuable national assets, trusted as a partner by some of the most demanding co-funders and research organisations in the world. This resurgence of value is also due to the innovative nature of SHIP, and the scientific productivity of the extramural research units and some of the intramural research units.

We have also noted that there are still important areas in which the SAMRC must continue to address challenges and concerns. The successful degree of revitalisation that was, in part, prompted by the last (2010) SETI Review Report has resulted from much more effective leadership, rebalancing of the funding model in favour of the more cost-effective extramural unit and grant-funding model, and the realignment of the intramural programme to meet, in more direct ways than previously, important gaps or specially high-priority needs in the

national health-care domain. However, the process is not complete, and in the face of a changing environment, it has to be re-conceptualised and re-structured in order to carry the Council into a future commensurate with its mandate and aspirations.

We have been obliged to consider the current ferment in national policy for the 'heart of the knowledge economy', and the science, technology and innovation domain. The universities have become the powerhouses of research productivity and human capital development, and the research/science councils distinctly less so. The spotlight has accordingly fallen on how these organisations, which include the SAMRC, can be made more effective and how they can be positioned better as essential complements to other players in the national system of innovation. This review is made more timely by this fact, but also more difficult – we only hope that our in-depth look at one research/science council will help shape the debate and assist its conversion into policy and best practice.

The SAMRC is a sectoral council, reporting to, and funded by, the NDOH, which has decided to set up a new statutory body, NAPHISA, with a newly set mandate that overlaps that of the SAMRC. The Panel has taken note of the key studies already conducted on the possible future policy and disposition of the STI institutions, and has

somewhat tentatively concluded that the threats to the SAMRC implicit in the establishment of NAPHISA may well be outweighed by the opportunities, not the least of these being the imperative to re-think the intramural programme in a bold new way. Thus, this potentially problematic development (at least as perceived by the SAMRC Board and Executive) may be turned into an opportunity for clearer role definition, funding rationalisation, organisational reordering, and improved coordination and collaboration across the 'research for health' system.

If there is one overwhelming recommendation for the future, then it is to define 'health' as both a national economic and social development goal – and to define 'research for health' as the national effort to ensure that the research needed to optimise the health of all South Africans and contribute optimally to South Africa's 'knowledge economy' can be undertaken. The SAMRC is the national institution best placed to provide such leadership and be the champion of 'research for health'. For it to exercise this role, it needs to be seen and structured as a multi-sectoral agency, with an appropriate mandate, and dedicated structure, governance and resources to act accordingly.



# CHAPTER 1

INTRODUCTION:  
REORGANISING THE BRIEF  
FOR THE PURPOSES OF THIS  
REVIEW

The 'terms of reference' for the 2017 SETI Review of the South African Medical Research Council (SAMRC) were prepared by the National Department of Health (NDOH). They required the Review Panel to answer the following questions based on assembled evidence and a coherent collective view. (Note: The full terms of reference are provided in Annexure A of this Report.)

1. Is the SAMRC functioning optimally to meet its mandate?
  2. Is the mandate of the SAMRC appropriate for South Africa?
  3. Is the SAMRC addressing the recommendations of the 2011 National Health Research Summit Report and the targets set by the National Development Plan 2030?
  4. What is the contribution of the SAMRC as a subsidiary of the Department of Health in strengthening the South African health research system with regards to the following:
    - a. *Shortage of human resources for health:* The Summit Report has recommended that funding should be [provided] to double the number of health researchers and academic clinicians over the next 10 years. The National Development Plan 2030 (NDP) target of production of PhDs by the South African government is to increase the percentage of PhD-qualified staff in the higher education sector from the current 34% to over 75% by 2030 and to produce more than 100 doctoral graduates per million by the year 2030. What is the contribution of the SAMRC towards the achievement of these targets?
    - b. *Lack of health research facilities and infrastructure:* What is the SAMRC's contribution in the creation of clinical research centres to facilitate research occurring alongside service and teaching in the academic health complexes?
    - c. *Research translation:* What is the role of the SAMRC in translation of research to promote uptake and utilisation of research results?
  5. How has the SAMRC aligned its role with the national health research priorities as set out in the 2011 National Health Research Summit?
  6. What are the research initiatives/contributions of the SAMRC in conducting:
    - a. research required to achieve an increase in life expectancy
    - b. research required to reduce maternal and child mortality
    - c. research required to combat HIV/AIDS and TB?
  7. What is the role of the SAMRC in assuring the best quality research on the basis of best practice of science and ethics?
  8. What should the output indicators be? Can they include scientific publications, contributions to policy positions/briefs, capacity strengthening, and production of patents and IP?
  9. How well does the SAMRC benchmark against similar institutions in upper- and middle-income countries in the developing world?
  10. What is the interaction between the SAMRC and other science councils such as the NRF, CSIR, HSRC and TIA?
  11. Is the SAMRC competitive in world terms given the changing nature of its funding streams and the broader developments within the National System of Innovation (including the cost of research and the demands of its funders)?
  12. What is the SAMRC's financial stability and the strength of its support services such as finance, communication and human resources?
  13. What are the main strengths and weaknesses of the SAMRC at present?
  14. What have the main achievements been since the last SETI Review regarding various indicators, including the pace and extent of its transformation, for example, capturing, building and the empowerment of women and black scientists?
  15. What progress has the SAMRC made in addressing the issues raised by the previous three Reviews?
  16. What links exist and how close are these between the SAMRC and government in provinces?
  17. What support does the SAMRC provide to Research Ethics Committees overseeing health research, especially clinical trials?
  18. What support/collaboration do academic institutions have or receive from the SAMRC? What portion is received by previously disadvantaged institutions in relation to that received by previously advantaged institutions? Of what nature are the collaborations?
- In accordance with the instructions given in the terms of reference, the Review process included extensive document review, including the prescribed set at minimum comprising:
- The MRC Act No. 58 of 1991
  - 2010 SETI Review of the MRC
  - 2011 National Health Summit Report
  - 2014 External Review of the South African Medical Research Council
  - SAMRC Annual Performance Plan, 2016/2017
  - SAMRC Research Highlights, 2015

- SAMRC Strategic Plan, 2015/16–2019/20
- SAMRC Annual Report, 2015/16

(Note: The full list of documents examined by the Review Panel is given in Annexure B.)

The Review Panel deliberated on the terms of reference and decided to re-arrange the questions in order to facilitate its work and to enable a coherent Report to be drafted. In particular, the SAMRC's mandate and its role in relation to the National Public Health Institute of South Africa (NAPHISA) were examined in the context of documentary and oral evidence gathered from a number of parties throughout the Review process. Other questions regarding connected issues were also aggregated and investigated in the same comprehensive way. The connected sections were then assembled to produce the chapters of this Report so that all the questions were eventually answered, although not in their original order.

The rearrangement was in part driven by the natural grouping of, or overlap between, some of the questions, but also stemmed from the Panel's perceptions, as the Review progressed, that some of the very important issues that emerged from the interviews deserved more emphasis than would have been accorded if they had been contained within a section on 'any other recommendations'. Thus, the final Report is presented in chapters that cover the position of the SAMRC in the national and international science system, governance issues, operational matters, capacity building, and a comparison with a selected set of other national health research funding bodies, as well as a limited foresight exercise.

The full programme of interviews carried out by the Review Panel is given in Annexure C. It was unfortunately not possible to conduct site visits because of time and logistic constraints. A number of interviews were conducted by the chairperson after the week-long official panel meetings programme at the request of the other panellists. The chair then shared information from these interviews, and the panellists provided their comments and observations as they had done during the in-person Panel interviews.

The Review Panel, appointed in late 2016 by the Minister of Health, Dr Aaron Motsoaledi, comprised six senior independent experts, one of whom is attached to the Department of Science and Technology. The Panel members have had extensive and complementary experience and knowledge of health research and innovation. The Panel members (full biographical details

are given in Annexure D) listed in alphabetical order were:

- Professor Hoosen Coovadia (deputy-chairperson), retired, chair of the 2014 ad hoc External Review of the SAMRC, South Africa
- Professor Wieland Gevers (chairperson), retired, chair of the 2010 SETI Review Panel for the SAMRC, South Africa
- Mr F Gray Handley, National Institute of Allergy and Infectious Disease, National Institutes of Health (NIH), United States of America
- Professor Carel IJsselmuiden, Council on Health Research for Development (COHRED), Switzerland
- Ms Glaudina Loots, Department of Science and Technology, member of the 2010 SETI Review Panel for the SAMRC, South Africa
- Professor Julia Mekwa, retired, ex-deputy chair of the NHRC, South Africa

Dr Alpa Somaiya assisted the Panel with recording the interviews and drafting the Report.

## Findings from previous reviews

In 2010, a SETI review of the SAMRC, which was an external review commissioned by the National Department of Health (NDOH), assisted by the Department of Science and Technology (DST), perceived the organisation to be an essential and valuable national asset, yet one which had encountered a range of serious difficulties that detracted from its ability to maximise its potential contribution. The organisation, inter alia, required strengthening of its governance, a more consultative internal environment, increased baseline funding from government, a re-balancing of the resource allocation model in favour of merit-based extramural research, sharpening of the SAMRC's mandate, improvement in the information conveyed in output and outcome indicators, and revitalisation of clinical research for health and innovation.

In response to this report, the Minister of Health, Dr Aaron Motsoaledi, appointed a new SAMRC Board and requested Professor Salim Abdool Karim to serve as president, for a term of two years, with a mandate to undertake a programme of revitalisation within the SAMRC. In the first months of his appointment, Professor Abdool Karim conducted an internal review of the challenges facing the SAMRC and developed a strategy for revitalisation, which was adopted by the SAMRC Board. Professor Abdool Karim identified nine actions designed to revitalise the SAMRC. These were to:

- **prioritise and focus the intramural research**
- **revamp extramural research support**

- optimise the support, and administration structure and functions
- optimise space and facilities
- **establish a new innovation entity**
- enhance library and information systems
- improve governance and funding
- improve human resource management
- improve information flow and communication.

Three of these actions (in bold) are centrally related to the research activities supported by the SAMRC rather than governance of administrative systems. In the intramural environment, the tasks included fostering a commitment to research excellence and the production of findings that could improve health in South Africa, right-sizing and focusing the cohort of intramural units to assure they address the top 10 most common causes of mortality in South Africa, creating a peer-review mechanism to assess the scientific quality of the intramural units, and increasing research funding available to the intramural units found to be meritorious and well-focused. Tasks related to the revamping of the extramural environment included the provision of additional funding to support extramural research, the provision of clearer information on the SAMRC's expectations of extramural units, and the expansion and improvement of the SAMRC's relationship

with the universities. The key task for the newly created innovation entity – the 'Strategic Health Innovation Partnerships' (SHIP) – was to secure substantial funding.

Two years after Professor Abdool Karim and the SAMRC Board initiated the revitalisation process, and as Professor Glenda Gray's term as SAMRC president was beginning, an ad hoc external review of the SAMRC was conducted (2014). The Review Panel considered the extent to which the task of revitalisation had been accomplished, and it made recommendations to advance progress on areas where additional revitalisation progress was needed. At the time of the ad hoc review, it was anticipated that significant amendments to the SAMRC Act were in preparation for submission to parliament.

While many of the recommendations of the 2014 external review were found to have been implemented, the Panel learnt that some recommendations, which it considers valuable, still needed to be addressed, or addressed more vigorously. These recommendations are dealt with in the subsequent chapters of this Review.



# CHAPTER 2

## THE FUNCTIONING AND POSITIONING OF THE SAMRC UP TO THE PRESENT TIME

## Historical perspective

The Review Panel familiarised itself with the history of the SAMRC, which has led to the present organisational features and the position of the SAMRC within the country's research system. Some of these features have been laid down in explicit policy terms, such as the specific mandate contained in the MRC Act of 1991, and an accelerated spate of new national science and technology policies and strategies adopted over the last decade, including the concept of a National System of Innovation (NSI), which embraces the idea of a coordinated matrix of differentiated public and private institutions and organisations underpinning the way to a prosperous 'knowledge economy' in South Africa. Others have emerged out of recorded or unrecorded strategic decisions; general developments in the political, intellectual and operating environment; stakeholder-based initiatives and perspectives; changes in the burden of disease; and the impact of enhanced globalisation.

A full summary of the trajectory of the SAMRC is given in the 2010 SETI Report. Here, a brief history of the SAMRC is given to provide background context to recent changes and developments within the organisation.

The South African Medical Research Council was established in 1969 in terms of the MRC Acts (19 of 1969 and 58 of 1991). The organisation's most important functions were 'to promote the improvements of the health and the quality of life of the population of the Republic' by performing 'research, development and technology transfer'. The Act further stipulates that the SAMRC will be accountable to a Board, the members of which are appointed by the Minister of Health. Creating a separate medical research organisation (medical research was performed by the CSIR at that time) by establishing the SAMRC was a landmark in the field of scientific research in South Africa.

In the first period, there were three structural levels of research: units, groups and institutes.

1. The SAMRC initially provided long-term support for research units that were built around outstanding scientists on their topics of interest. These units were to be set up for an initial period of seven years, although on review, this term could be extended or the unit disbanded.
2. Research groups would mainly operate within a hospital and were to be funded for up to five years. They were established only under certain

circumstances, for example, where a particular field of research needed to be accelerated or where there appeared to be a lack of support for research focused on an important subject.

3. The function of research institutes was to carry out work of a 'permanent nature' of 'national importance'. Unlike research groups and units, institutes were completely under the SAMRC's control. The only institute that was incorporated into the SAMRC in its first decade was the National Research Institute for Nutritional Diseases (NRIND).

The decision to incorporate the Nutritional Diseases Institute into the SAMRC led to the first intramural activities involving researchers employed and hosted by the SAMRC, initially as centralised places of special infrastructure (e.g. electron microscopy) or scarce skills (e.g. biostatistics and epidemiology.) This opened the way to a number of research units being created, more like the extramural units present from the beginning. The intramural programme, mainly devoted to public health research, expanded over the years. This programme eventually came to dominate the SAMRC's organisational and budgeting model, and became the major aspect of the SAMRC's research activities.

The units and groups constituted the major part of the SAMRC's extramural research activities. The focus of these research areas was initially on the mechanisms of causation, progression and reversal of common diseases, augmented in later decades by the newly evolving disciplines and training fields of public health, primary health care and health systems.

In November 1997, the SAMRC was reviewed by an international panel as part of the first set of SETI Reviews. The Review reported that during the previous three years, the SAMRC had undergone significant transformation 'in line with the national objectives of the new South Africa'. A key finding of the Panel was that 'the Medical Research Council is a "national asset", which is being successfully transformed to discharge its responsibilities and functions'. The Panel stressed the importance of the SAMRC remaining an autonomous body 'directly accountable to the people of South Africa through the Department of Health'. The Panel also recommended a substantial increase in the SAMRC's budget and placing more emphasis on priority-driven research.

There was another external review of the SAMRC in 2001 and a 'systematic review' overseen by the DST in 2006.

In 2010, another formal SETI Review was conducted. This thorough review was conducted at a critical time when

a number of key decisions had to be made in relation to the SAMRC. A new Board and a new president had to be appointed, amendments to the MRC Act were expected to be put before Parliament in 2011, and a strategic plan for the period 2010–2015 had to be developed. Some of the key issues highlighted by the Review include:

- the declining scientific stature of the SAMRC
- the declining extramural support at the expense of the SAMRC's intramural research
- the inappropriate positioning of the SAMRC in the National System of Innovation
- governance deficiencies
- operational shortcomings
- low value for money from the outputs and outcomes of the SAMRC
- limited clinical research
- the SAMRC comparing poorly in relation to foreign counterpart organisations.

Following the 2010 SETI Review, the SAMRC developed a new three-year strategic plan for the period 2011–2013. Following the review of this strategic plan by the NDOH and the National Health Research Committee (NHRC), the plan was rejected by the NDOH. In response to the strategic plan, the NDOH said that it 'fails to show how the MRC will change its work to address the national imperatives of increasing life expectancy, decreasing maternal and child mortality rates, combating HIV, AIDS and STIs, decreasing the burden of disease from TB, and strengthening health system effectiveness'. The response outlines in detail a number of major flaws in the plan that led to its rejection. Subsequently, a new SAMRC strategic plan for 2012/13–2016/17 was drawn up and was accepted by the NDOH.

A period of revitalisation, under president Professor Salim Abdool Karim, was undertaken at the Minister of Health's request, as described previously. Two years after this process was begun, an external progress review was conducted, the terms of reference of which were prepared by SAMRC president, Professor Glenda Gray, soon after her appointment.

The main findings of the 2014 Review were that while much progress had been made, the 'revitalisation' process was not complete; that inefficiencies still plagued the administration; communication was generally poor, both within and outside the organisation; and that misformulations and consequent misunderstandings of the SAMRC's core functions in the national 'research for health' system remained impediments. On a positive note, the SAMRC had impressive standing both nationally and internationally in reputational terms, and in leveraging external funding. The Council was well-positioned to play a critical convening role in

addressing the problematic issue of the coordination of research activities across organisations in this system. Considered very important was the urgent need for the SAMRC to be the champion of increased baseline and other allocations from the National Treasury, capitalising on the potential of the newly created 'Strategic Health Innovation Partnerships' (SHIP) division at the SAMRC.

## The statutory and general positioning of the SAMRC with respect to other South African research institutions and government departments

The Review Panel became aware of a considerable degree of preoccupation, in national policy terms, with the positioning of the research/science councils in South Africa's drive to use science, technology and innovation (STI) in a systemic and coordinated way for inclusive national development. Thus the Minister of Science and Technology set up a high-level review team to examine the institutional landscape of the STI system, focusing on the static nature of that landscape throughout the democratic transition since 1994, despite the introduction of innovative government instruments such as research chairs and centres of excellence. The report on this work was published in April 2017, just before this Panel began its review.

Amongst the main findings of the so-called STIIL (STI Institutional Landscape) Review were highly negative data on the relative lack of productivity (publications, high-level human capital, cost-effectiveness and innovation) in the research/science councils when compared with similar university-based activities. Even though a survey of these institutions revealed that they believed their mandates were appropriate and unambiguous, the reviewers in the main disagreed with this view.

A number of recommendations were made to address the situation. The reviewers' vision for the STI institutions was that:

- their operations should be brought closer to the needs of communities
- they should evince a strong problem-solving orientation
- there should be continuous prioritisation and re-prioritisation of the innovation agenda
- continuous foresight should be exercised with respect to the basic and applied sciences
- the aspiration should be for global excellence and innovation competitiveness.

The Report goes on to recommend that a new, overarching policy framework, including a regulatory policy,

should be developed for the STI institutions as to their purpose, functions and governance; that their individual mandates be reviewed and revised; that their efficiency and cost-effectiveness be enhanced; and that the system should be expanded by new types of STI institutions, such as research institutes, either stand-alone or virtual, across different participating organisations, including universities (an appendix to the STIIL Report was devoted to a detailed argument emanating from the DST itself on the desirability of a new 'national research institute' system).

The DST Report included a short discussion of a 2016 study of research/science councils conducted by HSRC researchers and published under the title of 'Balancing multiple mandates: The changing roles of science councils in South Africa'. This study included the SAMRC, and found large differences between the councils in the ways in which they responded to their mandates, and the challenge of developmental inclusiveness and social innovation. All had shortcomings in their ability to interact with marginalised or vulnerable communities, as well as informal sector actors. The engagements of councils with 'equal' partners, such as other councils, universities, business and industry, was much better developed although highly variable.

The 2017 SETI Review Panel has had sight of a draft-for-discussion of a document entitled '2017 White Paper on Science and Technology in South Africa' released by the DST. The suggestions for the science councils are that they should 'be shifted more towards enhancing applied research to improve the innovation outcomes of the NSI. The science councils will therefore conduct appropriate research to help the country in translating research to products and services as well as demonstrate the use of knowledge in transforming society and informing government policy.' The proposals go on to propose that 'councils will assume more active roles in policy development, advocacy and experimentation, which will require the science-policy interface to be strengthened and coordination to be improved'. In addition, better coordination of the activities of the different science councils will be required, and their roles in human capital development and the introduction of modern instrumentation/equipment consolidated.

In these circumstances, it is evident that the 2017 SETI Review Panel for the SAMRC cannot be very sure of the national policy framework in which its recommendations will be considered, or taken up or not, as the case may be. While the Review Panel appreciates the general gist of the re-thinking of policy, and concurs with the fact that re-shaping the STI system for better functioning

is important, it has a core conviction that the SAMRC should not abandon its commitment to basic and clinical research because these form the foundation for enhanced applied research and innovation, and underpin South Africa's role as an African and global biomedical research leader.

While noting the likely outcome of the STIIL Review, the SETI Panel executed its mandate and focused on the immediate working environment of the SAMRC, and its most direct partners, both existing and (likely) new ones. The SETI Panel's conclusions agree with some of the thinking emanating from the current policy ferment, but they also provide independent recommendations based on more specific public health and biomedical research expertise.

The Review Panel discussed its unease with the terminology used in some documentation to describe the SAMRC's role as a 'custodian of health research', and was in doubt as to whether the Council 'administered health research in South Africa' as claimed in virtually all its documents. In view of the Panel's preference of the term 'research for health' rather than 'health research' (see below), the Panel's point of departure was to question whether these were appropriate aspirations for the organisation. The main concern was that the term 'custodian' suggested that the SAMRC was in a position of control over all 'research for health' conducted in the country, which would imply some type of primacy of the Council over other independent stakeholders. The Panel instead considered that the SAMRC should aspire to play a national 'leadership' role through 'stewardship' (implying responsible guidance), rather than custodianship of 'research for health' in South Africa.

The Panel was similarly agreed that one of the most important roles of the SAMRC was in fact that of 'champion' of 'research for health' in the country. In this role, amongst others, the SAMRC should use its influence through the NDOH to press for larger 'research for health' allocations from National Treasury and leverage external funding for such research in South Africa, including from the private sector and international sources.

These two core mandates of the SAMRC should be built into the new SAMRC Act in order to provide clarity on the Council's role in its complex organisational setting. In this context, it remains problematic that the baseline funding of the SAMRC is surrounded by multiple barriers to an integrated view of the whole national picture of what is actually involved in adequately supporting 'research for health' in the country. These barriers include the sectoral allocation of funding responsibility for the SAMRC to the

NDOH, and the inability or unwillingness of other funded performers (the CSIR, HSRC and NRF) to quantify their relevant but uncoordinated expenditures in this domain. Another major barrier is lack of clarity by all concerned on what proportion of the national budget should be spent on 'research for health' and subsequently, how this is best distributed among the many science councils. One way around this, which has been done successfully by the SAMRC working with the DST and other partners here and abroad, is to exploit the ability of GIPD to work 'bottom-up', by establishing the necessary national and international partnerships, and then presenting the National Treasury with an 'offer it can't refuse' because of the demonstrably powerful leverage of its ad hoc funds. (This subject is discussed further below.)

In 2004, a high-level decision was made to re-arrange the reporting lines of the existing science/research councils: if their mandate was cross-cutting in terms of focus, they would fall under the DST, and if they were conducting research that mostly fell within the scope of a particular government department, the organisation would report to that department and be funded through it. This is why the SAMRC, despite being a public entity with its own parliamentary statute, reports to parliament through the NDOH and is funded at the discretion of that department. However, a 'market failure' loophole was established in the 2004 policy so that if a department was demonstrably unable to 'look after' a research council sufficiently well, it would be possible to reverse the decision and decide to allow the organisation to move back to the DST.

It is evident that the 2004 policy of DST-reporting cross-cutting (CSIR and HSRC) and sectoral (SAMRC, Agricultural Research Council, Council for Geosciences, etc.) science/research councils created the situation that while the SAMRC was indeed concerned almost entirely with 'research for health', the DST-reporting research/science councils, by virtue of their cross-cutting nature, could also undertake a substantial amount of research that fitted this description, as could other entities in the national system of innovation. In essence, 'research for health' is a national strategy – improving health for research (of any nature). This means that any research that substantively influences health should be part of this 'national strategy'. So, by definition, the 'research for health' sector will be fragmented, i.e. it will have many different sectors that play a role, including the private sector, international collaborators and others. This means it may be impossible to achieve a 'de-fragmentation' for all 'research for health' per se. Instead, the Panel is saying that the country will greatly benefit if there would be more national leadership and championship on the part of the SAMRC, and less 'leaving it to chance', to help

direct this sector, develop synergies, create strategies and ensure the highest quality.

The SAMRC still does not appear to have a close relationship with any of the other funding or research agencies, despite recent attempts by the current president to address this with convened round-tables and conferences, mainly in specific areas of focus rather than systemic coordination (for which it must be said some provision is indeed made in the collective public entity body called 'COHORT', with uncertain effectiveness in the present context). There is undoubtedly still a situation of an uncoordinated 'research for health' sector in which there is possible duplication of effort in some areas and little possibility of forging a 'differentiation logic' out of the mandates of the different organisations concerned. The DST is contributing significantly to joint funding, coordination and collaboration in specific innovation projects of the SAMRC, and the recent acceleration in this activity through SHIP is highly commended. The Panel nevertheless feels that the SAMRC, as 'steward and champion' of the national 'research for health' agenda, has an important role to play in convening well-prepared meetings across the relevant science/research councils, in order to mutually elucidate the nature and purpose of current investments in 'research for health', leading to better coordination, collaboration and the exchange of ideas. Unproductive competition resulting from undifferentiated mandates should, as far as possible, be minimised or eliminated.

The DST interventions have shown that there is value in the various councils leveraging funding and supporting each other, and thus building creative synergy. Research choices ideally need to be more complementary to address the many and complex health problems of South Africa. The Panel feels that a structured mechanism for engagement on common interests needs to be developed to enhance each individual council's abilities. The Panel perceived that the convening role of the SAMRC could enable dialogue at multiple levels: among researchers and stakeholders on particular issues of national importance; between the SAMRC, other science councils, the NDOH and the DST; and between the extramural and intramural units, as well as other health research implementers (for example, in academia). The Panel did note that the way in which the science councils are resourced also makes it difficult to work in a coordinated manner. As baseline sources of funding for different councils come from different ministries who do not have an explicit mechanism to optimise synergy, collaboration/coordination happens by chance rather than design, which is unfortunate. In addition, because a large component of income comes in the form of contracts, the use of this income is predetermined and,

to an extent, the councils become the implementing arms of the funders. These two factors make a creative response to issues challenging, just as it is difficult to pursue common agendas between the councils.

The Panel found that most of those interviewed agreed that the SAMRC has a critical 'convening' role to play in the area of 'research for health' due to its credibility, authority and statutory mandate. The recovered stature, influence and brand of the SAMRC in the post-revitalisation phase have reinforced this power. A 'research for health' agenda must be developed for the country by all the key stakeholders. Several of those interviewed suggested that the SAMRC could make a valuable contribution by drawing together researchers from different institutions and other stakeholders to set a research agenda at both macro and micro levels.

A troubling issue is the fact the statutory mandate of the NHRC overlaps with that of the SAMRC, even though the former is rather confusingly drafted in some clauses in the National Health Act of 2003. This problem has caused much difficulty in the past and to our knowledge is still not resolved at the time of this Review. Insofar as priority setting for 'research for health' is an explicit function of the NHRC through the National Health Act No. 61 of 2003, it lacks the infrastructure to do much more than gather information and deliberate in committee (although with the help of the NDOH it can convene conferences and participate in limited operations such as candidate selection for the National Health Scholarship Programme), and it has recently fulfilled one of its statutory mandates by drafting an 'Integrated National Strategic Framework for Health Research in South Africa' – see below). The best solution may be for the NDOH to assign a high-level surveillance and deliberative role to the NHRC in respect of priority setting, and to allocate the actual convening and coordinating function to the SAMRC through the recommended mandate of 'stewardship' and 'championship' enshrined in a newly promulgated SAMRC Act. After that, the arrangement could be captured in a partnership based on a signed memorandum of understanding. The advice to the Minister of Health in this domain could then be a joint one, incorporating the best and most reliable evidence and optimally informed opinion, but extending to other players in the 'research for health' system.

Throughout the interviews, the Panel consistently heard questions about whether the SAMRC, as a scientific agency, was more appropriately placed within the NDOH or DST. The track record of NDOH stewardship up to the 2010 SETI Report suggested to the 2010 SETI Review Panel that moving the SAMRC from the purview of the

NDOH to that of the DST would benefit South Africa and the health research enterprise of the country. Since then, the NDOH has, in many ways, responded to concerns raised in the 2010 Review, and the situation is thought to be somewhat better than in 2010. The NDOH told the Panel that it was impressed with the recent performance of the SAMRC and the Parliamentary Portfolio Committee on Health apparently corroborates this opinion. The NAPHISA initiative of the NDOH (see below) may also reflect the abandonment of the purely service delivery research (sometimes called 'handmaiden' notion) of the SAMRC's role in the health system that may have been entertained in the past. In this connection, one could cite the NDOH comments concerning the first strategic plan of the SAMRC submitted after the 2010 SETI Review that was rejected by the NDOH and the reasons given for that rejection. During several discussions, the Panel noted that it is not the central function of the SAMRC to undertake health management and service delivery research. Given the need to reduce intramural research, as stated in the MRC Revitalisation Plan, the SAMRC should ensure that operational, health system and service delivery research is done and funded in South Africa – and only consider establishing internal units to do this if no other research institutions – public or private – takes this up, or can deliver the necessary impartiality and excellence in the short term. This approach would also strengthen the role of the SAMRC as a national leader for 'research for health', as emphasised earlier.

The NDOH nevertheless still finds it difficult to deal with the fact that the SAMRC has to focus on health-related and medical research that is simultaneously required to contribute significantly to the broader national agenda of creating a knowledge economy across all sectors, while responsively assisting the national and provincial departments of health through effective research to improve their ability to deliver and manage health care. The Review Panel's opinion is that the SAMRC could well take up the role of 'championing' and 'funding' such research in other South African institutions, as we have recommended above, and this is one key way in which it could support the NDOH in obtaining sufficient health systems research, while continuing to focus on knowledge generation and basic research, supporting innovation and South Africa's growing status as a knowledge economy.

This tension is not specific to South Africa. Globally, nations balance their mandates to use research to optimise population health through 'health research' on the one hand, and to grow the economy and international competitiveness, which improves health through increased income, on the other hand. They do

this by creating two lines of research funding – usually through a ministry of health, and the other through a ministry of science and technology. As mandates are often different, there will always be tensions in how research resources are allocated between these two. While there are no perfect solutions, those countries that find constructive mechanisms of creating synergy between these two main sources of research for health funding are most efficient.

For that reason, the Panel, in summation of argument, feels that the SAMRC could continue to report to the NDOH if it was simultaneously able to develop stronger links with the DST and its main research funder, the National Research Foundation (NRF), as well as the CSIR and the HSRC. This should focus on creating the synergy with the non-health sector contributions to 'research for health'.

At the same time, to improve the impact of the SAMRC on the 'health sector', there would need to be more systematic, organised and recorded engagement between the SAMRC and NDOH, which ideally should happen at the levels of Board chairperson and SAMRC president. The Panel thinks that there should be formal and possibly alternating engagements every two months between these two individuals and the Director-General of Health. The meetings should have formal agendas, and the rapid production of minutes of decisions, agreements and actions to be taken would be essential.

## National Public Health Institutes of South Africa

An issue of concern for the Panel was the proposed 'National Public Health Institutes of South Africa' (NAPHISA), which according to a draft Bill, and which has now been placed before parliament and was made available to the Review Panel, is to be established to better address South Africa's health needs. Specifically, the aim of NAPHISA will be to conduct disease and injury surveillance, and to provide specialised public health interventions, training and relevant research directed towards the major health challenges affecting South Africans.

Within the overall statutory National Health Laboratory Service (NHLS), there are currently also specialised institutes, namely the National Institute for Communicable Diseases (NICD), the National Institute for Occupational Diseases (NIOH) and the National Cancer Registry (NCR). Therefore, when the NHLS experiences cash-flow problems, all three structures are affected because they are financed through the NHLS. The model is problematic because it combines

all public-sector clinical services based on laboratory diagnosis (the core function of the NHLS) with institutions mandated to deal with outbreaks, epidemiological surveillance, and monitoring and categorising diseases. The functioning of the NHLS has been seriously affected by these conceptual and structural problems, which need to be addressed at their source, in legislation. The primary rationale for establishing NAPHISA is thus partly to improve the efficiency of the NHLS, but mostly to draw together and expand the existing functions of the NICD, the NIOH and the NCR in a newly conceptualised organisation within the NDOH, which both the Minister of Health and the NDOH regard as essential for the success of the forthcoming National Health Insurance system.

The Panel had a number of immediate concerns arising from the imminent establishment of NAPHISA, but especially in relation to the future of the SAMRC. Firstly, given the low GDP growth and South Africa's constrained national budget, the Panel felt that there could be risks for the future funding level of the SAMRC. One of the key recommendations of the previous 2010 SETI Review and the subsequent SAMRC revitalisation plan was, in fact, to increase the SAMRC budget because delivering health services to the public is the main priority of the NDOH, and this may result in the overall research funding stream for the SAMRC in the budget of the NDOH to be cut to enable NAPHISA to grow.

*The panel also noted from earlier drafts that NAPHISA's core functions will be to:*

- coordinate surveillance systems that monitor disease and injuries
- provide specialised reference laboratory and referral services
- provide training and workforce development
- conduct research and support public health interventions aimed at reducing the burden of disease and injuries, and thus improving the health of the nation.

Of concern to the Panel was the fact that the SAMRC is already a leading contributor to national services in several of these 'core NAPHISA functions' according to its statutory mandate and especially following its recent revitalisation programme. The NAPHISA Bill (2(1) a–d) proposed the establishment of a stable of institutes in line with the mandate contained in the draft Bill:

- The National Institute for Communicable Diseases (NICD)
- The National Institute for Non-Communicable Disease (NINCD)
- The National Institute for Injury and Violence Prevention (NIIVP)

- The National Institute for Occupational Safety and Health (NIOSH)

The SAMRC already has established units in these or closely related areas:

- The HIV Prevention Research Unit, and the Centre for Tuberculosis Research, plus 10 HIV/TB collaborating centres
- The Non-Communicable Diseases Research Unit, and external cancer centres
- The Violence, Injury and Peace Research Unit; and the Gender and Health Research Unit

In addition, the existing Burden of Disease Unit of the SAMRC has purposes that are almost completely congruent with the proposed activities of NAPHISA:

- To estimate and monitor the burden of disease, and other indicators of population health
- To improve health information and surveillance systems
- To undertake methods of research to support burden of disease and surveillance
- Capacity development and support
- To make information available for health policy and planning

We have emphasised the fact that 'research for health is very fragmented in South Africa, and establishing NAPHISA without clarifying its main role vis a vis the SAMRC will only add to this fragmentation. Therefore, we strongly recommend that this be fully investigated as soon as possible. Within the limits of information available to the Panel, we wish to make the following provisional suggestions/observations for consideration by NDOH and DST:

- The two public entities, occupying overlapping niches in the health system, would have to engage fully to investigate whether they can coexist in ways that respect their mandates, and maximise synergies and collaborations in present and future activities, preferably before the legislation is passed by parliament. With its research expertise on national health priorities and globally competitive 'research for health', the SAMRC is a mature national asset and can support NAPHISA in many ways. This might involve moving (not necessarily physically) some of the SAMRC functions to NAPHISA (such as the Burden of Disease Research Unit; Violence, Injury and Peace Research Unit; and surveillance elements present in other SAMRC programmes) while perhaps placing some of the basic research activities of the NICD, for example, the ground-breaking work on the immunology and genetics of HIV, under the SAMRC (either as intramural or extramural units or programmes).

- Certain activities of the Human Sciences Research Council (HSRC) are also likely to be impacted by the establishment of NAPHISA in the form specified by its draft Bill, and it may be necessary also to 'rationalise' the activities of the two organisations as suggested above for the SAMRC.

- With the diminishing funding available globally, and particularly for low- and middle-income countries, role clarification in terms of research mandates between (agencies within) NAPHISA and the SAMRC will help external research and research-finance partners in allocating funding for international collaborative research for health, which currently makes up a substantial part (more than 50%) of the total South African health research budget. Therefore, this role clarification is an important aspect of establishing NAPHISA, and may benefit both NAPHISA and the SAMRC.

- There are, in fact, many opportunities for both NAPHISA and the SAMRC to occupy mandated niche areas that are complementary and generate economies of scale, i.e. build critical mass. For example, the Panel noted the relative weakness of the SAMRC in the field of 'big data for health'. Joint work with several of the NAPHISA units on creating well-structured, compatible data repositories can be a major asset to improve health through research, even in the short term, can increase the number and productivity of doctoral students in statistics and epidemiology, and can improve commercial innovation in various aspects of medical care – to name but three potential benefits of setting up collaboration in advance.

- The SAMRC and NAPHISA can coexist very well if the national 'research for health' paradigm is fully implemented so that the surveillance and general service focus of NAPHISA is emphasised, including the identification of critical research questions, the answering of which can directly improve health practices, care and systems. The performance of prospective and responsive longer-term research would then be the mandated preserve of the SAMRC. The SAMRC could thus generate knowledge and provide evidence to formulate policies that NAPHISA could implement, and NAPHISA could refer to the SAMRC those problems that it is unable to address because of a lack of the necessary capacity or depth of focus. Continuous feedback and collaboration covered by a memorandum of understanding would foster the production of joint solutions to health problems. Alternatively, a committee could be set up of both national and international experts who have



worked in other countries where such dichotomy exists, with the aim to make recommendations to maximise the impact for South Africa. The agenda could be open, including shifting entire units between the SAMRC and NAPHISA if that makes the best sense in terms of cost-effectiveness and/or impact.

Initially, it was unclear to the Panel whether it should make recommendations for the SAMRC based on the imminent establishment of NAPHISA according to its draft Bill. After interviews with the Director-General of Health and a representative from the National Treasury, the Panel were informed that NAPHISA was indeed soon to be established, after due parliamentary processes, but that there would be little, if any, impact on the SAMRC's budget because NAPHISA funding would come from a stream different to that of the SAMRC. It was also intimated that there would be plenty of downstream opportunities to construct working agreements between the two bodies.

The Panel is fully aware of the implications for the SAMRC's mandate due to the establishment of the NAPHISA in the form in which it is conceptualised in its draft Bill now before Parliament. If some of the most obvious agreements on rationalisation are made on the lines mooted above as strong possibilities, the Council may have to become involved in further elaborating the types of re-thinking now under way, driven by the DST and described at the beginning of this chapter. The opportunity would arise for a new type of partnership with the NRF as a research funding body, a greater reliance on extramural research as a cost-effective, productive and innovative research programme (also partnered with existing NRF instruments such as research chairs and national centres of excellence or innovation), and a re-casting of the existing intramural programme within the context of new STI institutions, such as national institutes, to help change the static STI institutional landscape. The original intramural entity within the SAMRC was in fact the 'National Research Institute for Nutritional Diseases' (NRIND), which (see priority-setting section below) may well be a candidate for re-instatement in a new guise because malnutrition and its longer-term consequences is a form of disease burden grossly under-estimated in most 'burden of disease and mortality' assessments. The challenge of re-casting the intramural programme of the SAMRC could be an exciting prospect and lead to a second round of revitalisation within the organisation.

(Note: At a meeting of the Parliamentary Portfolio Committee on Health held on 21 June 2017, the Director-General of Health, Ms M P Matsoso, took part in a puzzling exchange captured in the minutes of

the meeting, which were made available to the Panel: 'Ms Kopane noted there was a lot of responsibility on NAPHISA – she asked if NAPHISA was taking over the responsibility of other institutions. Ms Matsoso said there were a number of institutions that existed, in their own right, before the National Health Laboratory Service (NHLS) Act was formulated, but the NHLS was made an umbrella for some of these institutions. The specific provision abolished all laboratories. The SA Institute of Medical Research, SA Medical Research Council (sic), SA Institute for Virology, Forensic Chemistry Laboratory and all provincial health laboratories were all put under the NHLS. These institutions themselves did not have their functions written anywhere in the law. NAPHISA will be working as a coordinating body to put the institutes to better use.' Elsewhere in the minutes, by contrast and reassuringly, Ms Matsoso's input was reported as follows: 'Ms Matsoso indicated the Medical Research Council (MRC) was a research institution while the NAPHISA would be involved in ongoing surveillance so as to identify when there was a need for different strategies in health interventions adopted by the Department.' The Review Panel accordingly assumes that the mention of the SAMRC in the first extract from the minutes was either a recording mistake or an innocent mis-statement by the Director-General, and does not reflect the intention to have NAPHISA coordinate the activities of another statutory body, the SAMRC.)

## The crucial concept of 'research for health'

As previously mentioned, this Review was used by the Review Panel as a forum to clarify the issue of the difference between 'health research' and 'research for health'. It is the Panel's view that the SAMRC, by virtue of its Act, is well-placed within a National System of Innovation (NSI) framework model in which it is statutorily mandated, without the possibility of challenge, to lead in and help perform a significant part of the 'health and medical research' (sic – 1991 MRC Act) performed in this country. This particular mandate (even if outdated – see below) is sufficiently important in the wide spectrum of 'research for health' (which makes up all the enquiries needed in many domains to promote the health of the whole population) to justify having a science/research council such as the SAMRC providing the stewardship and championship of its overall national development, embedded in an NSI in which the full spectrum of needed enquiry is covered by a variety of organisations and institutions well-networked through effective planning, coordination and collaboration.

Human health is impacted by many factors in society and the environment, and many organisations legitimately

regard it as part of their mandate to address these factors in order to help improve the health of the nation. The Panel is of the view that the concept of national 'research for health' is the most powerful guiding principal for addressing organisational issues and has framed its recommendations accordingly throughout this report.

We have concluded previously that the arrangements of the science councils since 2004 are intrinsically antithetical to any attempt to treat the national 'research for health' agenda as a plannable, monitorable or steerable entity. Vested world views and interests are at stake, even discounting the definitional confusion, genuine overlaps, and disagreements that abound. Why then, does the Panel espouse the concept so strongly? The WHO has officially adopted 'research for health' as the term to be used in the context concerned. We believe the post-2004 research/science council model was introduced in good faith and made a reasonable amount of sense at the time in organisational terms. The crucial error was omitting measures that would ensure that the 'sectoral' councils would, in each case, be defined as the 'champions' and 'conveners' of overall 'research for X' across the national system of innovation, and would be given the tools to ensure that this would be possible, i.e. information freely available about the nature, extent and cost of 'research for X' as performed or supported by non-sectoral, cross-cutting councils, together with information on infrastructure both human and material, ratings and review outcomes, and publications. (In the case of overlapping domains, agreed 'fractions of share' would have to be pre-allocated to the two or more domains on a reasonable basis.)

The 'research for health' paradigm also helps, in a more up-to-date way than does the 1991 MRC Act, to both justify the continued existence of the SAMRC (especially in the light of the proposed NAPHISA) and to sharpen the focus on what its core business should be. It could mean that investigation of basic mechanisms of disease or ill-health, including the search for preventive strategies and effective therapies, should be regarded as central to the SAMRC's focus, whether they be in the bio-pathological, psycho-pathological or socio-pathological sub-domains of 'health and medical research'. This is an area in which innovation and translation is of the essence, with countless opportunities for research impact through better practices and new products, for both human and animal health, in agriculture and conservation, and so on. From the system point of view, the new SAMRC Act should seek to codify the types of 'championing' and 'convening' powers discussed above so that the shortcomings of the 2004 'policy' can be overcome by a new 'statute'.

The question of fragmentation and lack of coordination across government departments lies at the core of the failure to achieve inclusive national development, and especially the aspiration that knowledge and innovation should be the drivers of that development. In this connection, the Panel was interested to note a 'policy brief' issued this year by the DST based on the work of a group of HSRC researchers. The brief, in its summary, states that the principal barrier to inclusive development is the high degree of fragmentation and potential lack of synergy between government departments rather than a lack of appropriate policy instruments. The brief recommends much better coordination across relevant departments to extend, deepen and align the focus of existing policy instruments in order to integrate innovation goals where they are missing, or promote socioeconomic inclusion goals, the design of new policy instruments specifically to achieve this, and to facilitate the formation of effective implementation networks.

We believe that our proposals for the core mandate of the SAMRC are in line with this thinking.

## Priority setting

The SAMRC has a written strategic plan for the fiscal years 2015/16–2019/20. The organisation derived its four main goals and strategic objectives, in the main, from the MRC Act. These have been consolidated here-to-date as follows:

1. Administer health research effectively and efficiently in South Africa
2. Lead the generation of new knowledge, and facilitate its translation into policies and practices to improve health
3. Support innovation and technology development to improve health
4. Build capacity for the long-term sustainability of the country's health research

While the strategy document provides detailed explanations of what each focus area entails, it is not clear how each of the objectives will be achieved. The report also does not describe in sufficient detail how the current set of research objectives will be 'migrated' into this new strategy, and how the strategy will be implemented.

The SAMRC has undoubtedly assisted in re-focusing the national research effort on the three inter-related areas identified as the nation's top health priorities: increasing the longevity of the population, addressing maternal and child mortality and morbidity, and fighting the pandemics of HIV and tuberculosis infection. While the favourable outcomes of these campaigns are

reflected in all surveillance data, some of these are due to background improvements in the social determinants of health. Even so, we are nowhere close to where South Africa should be in terms of these key priorities.

The SAMRC needs to define the focal areas of its research in such a way that the organisation is able to link up with both the NDOH and the DST, as well as the CSIR, HSRC and NRF. What is important operationally is the fostering of transdisciplinary thinking in the research environments of the SAMRC on the SAMRC's own campus and regional centres, and on university campuses. The Panel was surprised to find that an intramural unit working on tobacco and other addictive drugs was not collaborating or interested in the work of an extramural unit (located in the same region) working on anxiety/stress and obsessive-compulsive disorders. The Panel found this lack of interaction, inside and outside the organisation, a common theme throughout the SAMRC. Cross-unit seminars or journal clubs need to be held frequently to build a critical and interactive community of researchers. It should be a core function of the SAMRC to organise and support activities that help foster and strengthen connections between all South African scientists engaged in health research. To achieve this objective, there should be a dedicated person assigned that would work closely with the president and other SAMRC leadership.

One aspect of this 'research community' that could be built quickly and easily is the creation of an 'open access' SAMRC repository of published papers, dissertations, reports, proposals, and the like, similar to those now being established at most South African universities. The library of the SAMRC seems to have become inadequate and somewhat irrelevant. Effective knowledge and data management is essential to improving the translation of health research and its applications in general. The SAMRC holds an immense store of data collected over the years, which when analysed and suitably packaged, will have significant value for future policy and strategy development. In this regard, the organisation needs to develop processes and platforms that promote information exchange and knowledge sharing through the mining, analyses and reporting of stored data.

The Panel noted that there was no mention of foresight into possible future research priorities in any of the documents it received. It was the view of the Panel that much of the research conducted by the SAMRC focuses on past and current problems facing South Africa. Priority setting for the organisation needs to include identification of future trends and anticipated challenges in order for the SAMRC to become the anticipatory lead and champion of research for health.

In connection with systemic issues, such as foresight, it is important to note that the Academy of Science of South Africa (ASSAf) has developed a strong programme of 'consensus reviews' and other forms of multi-perspective evidence-based advice, many of which focus on health-related themes (see Appendix E). The Academy has a standing committee on health matters that advises its council on proposals for new studies. This is a function performed in the UK by the Academy of Medical Sciences (see Chapter 6 for details). The SAMRC could, with great benefit, commission studies from ASSAf in order to investigate key issues in depth, and could also include the Academy in its convening partnerships in the 'research for health' stewardship and championing roles.

The Panel felt that the vision of the SAMRC, that it should be a leader within the continent (in terms of the management and performance of large-scale scientific projects, the integration of basic science into clinical studies, and ensuring that all aspects of medical science relate together and to the health system), seems to have waned. Clear and pro-active leadership is needed for the full unfolding of the SAMRC's potential as a regional and global leader in biomedical and behavioural science as a way of advancing South Africa's role and impact in Africa, which in turn, will have a positive effect on South Africa. Therefore, the idea is not just about 'pro-active leadership' within the SAMRC, but also within the NDOH and the DST as it relates to SAMRC leadership in South Africa. This will require resources, for example, and a clear position of the NDOH and DST on the role and resources required to achieve a position of prominence. For example, if the SAMRC were to establish a vice-president's office with an operational budget for international liaison in 'research for health', it would increase its budget and also the 'administrative component' of its budget, but it would greatly increase the SAMRC's ability to play a pan-African role.

In this respect, the Panel noted that the president described some areas in which the SAMRC was working towards moving into a regional leadership position in the next few years. Some of these include 'big data', an antimicrobial resistance programme, traumatic brain injury, malaria and a five-country study on obesity. (The Panel found it surprising that these projects were not described in any of the documentation reviewed. In this connection, the broader issue of the general nature of the content of SAMRC documentation also needs mentioning – the Panel found it to be too repetitive of content and too focused on process, with too little on outcomes to convey accurately how much of the real agenda of the Council is frustrated by programme/project hurdles such as under-resourcing and lack of coordination in the 'research for health' system. To put it bluntly, the narrative is not 'upfront' enough.)

The Panel felt that the SAMRC had not clearly thought through its priorities regarding the vast domain of NCDs. Because South Africa has the most developed economy in sub-Saharan Africa, it is the natural regional leader in NCD research. However, it has not articulated a leadership vision for NCD research. To effectively conduct research in this area, one needs first to know in which disease areas the largest number of deaths and 'disability-adjusted life years' (DALYs) are occurring. It seems that the DALY figures that are currently being used are not accurate enough to base the research agenda on. (For example, there are important and very common proximate or distant causes of ill health that are undervalued in the current global and national approach, such as intra-uterine initiation of life-long disease, stunting, subclinical nutritional deficiencies or imbalances, and disturbed mental health.)

In an earlier discussion, we mooted the possibility of re-casting the intramural programme of the SAMRC in a way that would consolidate, at an internationally competitive level, the strengths of the country in a small number of crucial priority areas, especially where these are neglected at universities and/or require full chains of expertise from basic to applied to translational. The fact that many South Africans are experiencing a rapid and large-scale lifestyle transition, that there are damaging and unresolved nutritional controversies (like low-versus high-carbohydrate or fat diets), the persisting, scandalously high incidence of stunting in children, and a serious problem of co-morbidities in older people, amongst other issues, should provide plenty of food for thought in this regard. These areas also provide for the types of inclusive outreach to communities recommended in the recent thinking about research/science councils.

It should be noted that in terms of setting the national research agenda, the NHRC in the NDOH was statutorily mandated to advise the Minister on priorities for 'health research'. The Panel is of the opinion that the priorities of the country for 'research for health' need to be looked at again by both the NHRC and the SAMRC. For an accurate assessment of what these should be, the SAMRC should send the NHRC all new published work on the morbidity and mortality rates in the country, with such caveats as are necessary or indicated.

The NHRC has, in any case, taken as its point of departure for setting health research priorities and listing operative criteria for prioritisation, the following:

- The burden of disease (i.e. this is only one of the considerations)
- The cost-effectiveness of interventions aimed at reducing the burden of disease

- The availability of human and institutional resources for implementing an intervention at the level closest to the affected communities
- The health needs of vulnerable groups such as woman, the elderly, children and people with disabilities
- The health needs of communities

The Panel agrees with the NHRC that the 'burden of disease and death' should not dominate priority setting; the tractability of the problem, the age and life-situation of affected individuals, and the uniqueness of the local affliction should also be built into the evaluation.

This is a matter of some urgency because the last time the NHRC set health research priorities as a consultative process was in 2006, and the landscape and available information have changed significantly since then. However, because of its very nature, the SAMRC may have different views on what the research priorities of the country should be. To best serve the country, there needs to be open dialogue between the SAMRC and NHRC so that the SAMRC ensures that the NHRC has all the information it needs to set clear priorities. The Panel thus strongly believes that research priorities should be set using credible and transparent methods in an inclusive approach and with possible help through validation by external organisations.

Regarding the high priority that should be accorded to the National Development Plan's proposals for health, the Panel learnt that the organisation did attempt some pilot interventions around physical exercise in schools, focusing on teachers. A number of significant hurdles were encountered in taking this forward, especially in poorly resourced schools. For example, most children only had one school uniform (and no exercise clothing), which understandably they (and their parents) do not want to get dirty. In addition, there was the issue of access to water and showers. The exercise programme did not work because the organisation could not address some of the fundamental structural issues because these were clearly not part of the SAMRC's mandate. The failed initiative does illustrate, however, that to achieve 'impact through research', the SAMRC needs to operate in a collaborative manner, engaging other actors in 'research for health' to increase the likelihood that research findings will be translated into useful action. The Panel got the impression that the problem of addressing this important aspiration of the NDP has been abandoned too early, and that further thought and ingenuity may well uncover an approach that is less hedged with practical difficulties requiring prior action by others.

In the latter context, it is appropriate to discuss more fully the implications of the document supplied by a member

of the NHRC to the Panel entitled 'An Integrated National Strategic Framework for Health Research in South Africa', the official status of which is unclear, despite it containing prefaces by both the Minister and the Director-General of Health. The document is impressively coherent and detailed, but has proposals that are likely to require extensive new public funding at a time of severe austerity due largely to the lack of economic growth in the country. In this Report, we discuss the funding of two strategic 'pillars' of the strategy: the SAMRC-administered 'National Health Scholars' Programme' (the funding of which is not being brought to scale as envisaged – see Chapter 5), and NAPHISA, for which a funding route appears to have been found (see above). A second 'pillar', already established by the NDOH and the Health System Trust, is the 'National Health Research Database' (NHRD). The Integrated Strategic Framework of the NHRC envisages two further new 'pillars' in the form of a 'National Priority Health Research Fund' and a 'National Health Research Observatory', and also sets targets for total funding of 'research for health that represent very significant increases on present expenditures'. (The former would presumably be administered by the SAMRC and the latter by NAPHISA, although this would depend on a clearer idea of how the proposed Observatory would function, building on the NHRC's initial model as already described.)

Acceptance and implementation of the NHRC's entire Integrated Strategic Framework would have positive significant implications for the SAMRC. The Review Panel is, however, cautious about the likelihood of this happening soon.

The Panel was generally satisfied with the approach of the SAMRC to ethics monitoring, both in respect of its own research programme and in its national role in helping the National Health Research Ethics Council to carry out its functions and for institutional committees meet their obligations.

## South-South Collaboration

The view of the Panel is that the role of the SAMRC, within Africa as a whole, should be to help build up national science/research councils to address health issues, and to highlight the fact that science and health research are essential for sustainable health and socio-economic development. This is because it is well-established, steadily improving its capabilities and influence, and can improve continental health, economic self-sufficiency and competitiveness, which in turn are ultimately of direct benefit to South Africa as well.

The NDOH has bilateral agreements with a number of countries constituting South-South and North-South relations. These generally concern service delivery,

health systems and the control of outbreaks of infectious disease. The DST, by contrast, has the mandate to promote and manage international scientific partnerships. The SAMRC, in seeking to expand collaboration in its region or further afield, thus needs to work with both of these departments, and should explore options to do so in the near future. This means, for example, finding ways to be part of international delegations when either the NDOH or the DST visits these potential partners, to explore areas of service delivery or scientific collaboration. In certain instances, bilateral agreements may be developed that the SAMRC could benefit from in terms of grant funding for identified research projects. The Council could then partner with the NDOH during the signing of these agreements, which could clearly delineate the research component that would be submitted to the DST for assistance in securing (preferably multi-party) funding.

It was noted that SAMRC has signed bilateral agreements and launched collaborative research programmes with some key international counterpart agencies, for example, the U.S. National Institutes of Health. The Panel commended these programmes for increasing the resources available to South African investigators, and for fostering sustained research partnerships that advance discovery, benefit early career scientists and enhance science management capacity at South African academic and research institutions. These collaborative programmes also contribute significantly to the SAMRC's prestige and its capacity to provide national, regional and global leadership. Therefore, because the benefits of these partnership programmes are so evident, the Panel believes that the SAMRC should be strongly encouraged to develop or continue such productive relationships and programmes, and carefully evaluate their scientific and infrastructure strengthening productivity as they mature.

South Africa is signatory to a number of conventions within the Southern African Development Community (SADC), African Union (AU) and WHO. Through these institutions, the NDOH has certain obligations to fulfil – some of which involve health research. The SAMRC is best placed to be the NDOH's implementing arm, specifically for these types of relationships. Closer collaboration and cooperation could, for example, result in SAMRC scientists being seconded to represent the NDOH at WHO, AU and similar structures, should the need arise. In other cases, it would be better for the SAMRC to enter into its own bilateral agreements, if feasible, or work with the DST to achieve appropriate arrangements.

With regard to multi-sectoral collaborations and capacity-building initiatives, the SAMRC's involvement spans the SADC region and the rest of the African continent. However, research training and capacity development

within the SADC and other regions remains inadequate by many criteria. Given the deteriorating health status and the increasing burden of disease within some countries in the SADC region, science, health research, technology and innovation remains a decisive strategic opportunity for the SAMRC to strengthen and increase research capacity, and collaborate regionally with the SADC, and other regional and international institutions.


The inclusion of South Africa in the BRIC grouping of countries, comprising Brazil, Russia, India and China in late 2010, put an African voice at the core of the world's most dynamic economies regarding what they consider a range of pressing issues. The implications were that a specific health agenda would be developed and health research would become a significant part of the agenda. The SAMRC, as a national research body, should seek representation at meetings in this connection, to foster collaboration and partnerships that would enhance its research experience and better advise departmental programmes.

Global health requires that South African scientists become global players and exchange information, knowledge and skills with their counterparts, and not only in countries that have a bilateral agreement with South Africa. Of the South-South relationships, Cuba is of significant importance because there is already an existing programme of cooperation on medical education. For example, the South African-Cuba Medical Education Programme could benefit from the experience and coordination of the SAMRC's Research Capacity Directorate. Over the years, the SAMRC has produced Masters and PhD graduates through this programme. Systems, policies and procedures are already in place that could add value for the NDOH in coordinating the programme. Additionally, the students could be placed at the SAMRC during their holidays to increase exposure to research at an early stage in their career, thus increasing the pool of research clinicians in the future. Further areas to be explored are biotechnology, drug development and vaccine production because Cuba is self-sufficient in these areas.

## Recommendations

1. The SAMRC's lead role in 'research for health' in South Africa should be articulated and operationalised in terms of being a 'steward' and a 'champion' rather than a 'custodian' or 'administrator', and this should be captured in the 'mandate' section of the proposed new SAMRC Act.
2. The Council should be forthright in publicly reporting on under-resourcing overall in terms of its present, but more especially its future, updated mandate. It should also point out the real requirements of priority programmes and projects, and the lack of coordination and the deep fragmentation in the 'research for health' system.
3. The SAMRC should use its convening and coordinating power to address the fragmentation of the 'research for health' domain in South Africa. The activity should occur at multiple levels:
  - a. Between the intramural and extramural units
  - b. Between the SAMRC and other science councils, and with the NDOH and DST
  - c. Within multi-stakeholder groups (including the private sector) to discuss and set agendas for research on key areas, for example, the NHI, common non-communicable diseases, mental health, etc.
4. The SAMRC should lead a process to take stock of 'research for health' across science/research councils to better understand gaps and identify opportunities for synergies maximally based on mandate differentiation and openness.
5. There needs to be more formal, regular and substantive engagement between the NDOH and SAMRC at the levels of both board chairperson and president.
6. A clear mandate that differentiates it from the SAMRC, as well as a definition of core areas of synergy, are required for NAPHISA to be sustainable and successful in meeting the expectations that have led to its proposed establishment.
7. NAPHISA should focus primarily on public health, particularly primary health care and health systems, to better serve the public. Given the considerable overlap and duplication evident in the available documentation, the proposers/drafters of the NAPHISA Bill and SAMRC leadership should urgently hold a strategic meeting to:
  - a. establish the specific high-level roles of both organisations in the health system
  - b. identify the nature, productivity and systemic value of their present core research operations
  - c. harness synergies through agreed mechanisms

- d. set up a collaborative model in which NAPHISA leads certain streams, the SAMRC leads other streams, and both have a distinct set of research activities.
8. A commission should be appointed, with the necessary resources and skills, to develop an implementation plan for NAPHISA and the SAMRC, taking into account the country's resources and needs, so that the two organisations have different research mandates and work alongside each other for the benefit of South Africa. This could entail structural and organisational changes in the distribution of units more appropriately housed in one or the other entity. This need not lead to physical relocation but should if this is functionally essential. This could be an excellent opportunity to rationalise and improve health research in terms of collaborative efforts, and also with other research organisations.
9. Research linkages with other organisations need to be significantly improved, including those with the Technology Innovation Agency, NHLS, HSRC, CSIR, NRF and the nascent NAPHISA.
10. Improvements in the synergies between intramural and extramural units should be effected. To this end, an 'open access' organisational repository should be established for deposit of all accepted peer-reviewed papers, books and conference proceedings, as well as dissertations, proposals, reports, and so on.
11. Collaborative programmes and groups should be monitored to ensure that they are 'adding value beyond the sum of their parts'.
12. The SAMRC should include forward planning as part of its strategic thinking, and should commission the Academy of Science of South Africa (ASSAf) to investigate, in depth, key topics in the health system on an evidence-based and multi-perspective basis.
13. There needs to be clearer goal setting in terms of what the organisation's research agenda should be and providing more clarity on how the SAMRC decides what focus areas to concentrate on.
14. The SAMRC and NHRC should develop a cooperative relationship to best serve the country in setting its research priorities.
15. The SAMRC should explore options to fully exploit the opportunity afforded to it by the NDOH and the DST to develop South-South and North-South collaborations.
16. The Council should facilitate and support the NDOH in reviewing and implementing policies and programmes aligned to and compliant with international and regional conventions, codes of practice and standards.
17. The SAMRC should partner with the NDOH, the DST and foreign counterpart organisations in international collaborations to leverage funding, enhance research capacity in South Africa, and further elevate the SAMRC's international status.



# CHAPTER 3

## GOVERNANCE ISSUES IN THE SAMRC



The MRC Act No. 58 of 1991 defines the objects of the SAMRC 'through research, development and technology transfer, to promote the improvement of the health and the quality of life of the population of the Republic and to perform other such functions as may be assigned to the MRC by or under this Act'. The Act further sets out the functions, powers and duties of the SAMRC.

## A new SAMRC Act: An urgent necessity

During the 2010 SETI review, the Panel was given a draft Amendment Bill dated 2006, which was intended to update or replace the MRC Act of 1991. The main amendment proposals in the version included:

the specification of 'essential national health research' as an integrated strategy determined by the Minister, after consultation with the NHRC '... for organising and managing health-related research ... to promote health and development in a manner that is just and equitable, and to enable the State to fulfil its constitutional obligations concerning health-care services'

- the definition of the SAMRC as a national public entity in terms of the Public Finance Management Act (PFMA)
- a specific mandate to build capacity at historically disadvantaged institutions in health research
- the SAMRC Board chairperson to be the 'accounting officer' under the PFMA
- SAMRC Board membership to last 5 years, renewable once
- removal of the requirement for the SAMRC president to be registered as a medical practitioner
- an annual performance review of the SAMRC by the Board.

Because the SAMRC Act has not been amended to date, the Panel had to use the existing 1991 Act to guide its assessment of the current governance function in the SAMRC. However, the Panel was made aware that another draft amendment was submitted to the NDOH at the end of 2015. The rationale behind this amendment was the view that 'the SAMRC was not putting enough energy into making itself visible and relevant in communities; it was not simply the matter that the research being done was irrelevant, but that there were also real translational problems'. Substantive changes proposed to the Act would include new leadership requirements for the SAMRC president (for example, being either a medical doctor or a medical economist), the funding model and the funding amount. This draft was again not promulgated as legislation.

With the advent of the NAPHISA Bill, and the resulting requirement for a new NHLS Bill, the SAMRC legislation has had to be put on a 'back burner' by the NDOH because of pressure for Bills from other departments needing to be considered by parliament at this time. It is clear that after 26 years, and many changes in the health sector organisational structures, capacity and need, the SAMRC Act is overdue for amendment or replacement.

In an interview with the Panel chair, the NDOH Director-General of Health stated that she would prefer the SAMRC Act to be replaced with an entirely new Bill rather than it being corrected through amendment. She suggested that the Review Panel could make suggestions on what to include in a new Bill in this Report. The Panel appreciated this suggestion, but noted that its mandate from the Minister of Health did not include this responsibility and that a separate panel of expert advisors would be a more appropriate means by which such draft legislation might be prepared. Such a course of action is strongly endorsed by the SETI Review Panel, and with this in mind, the Panel has included in this Report suggestions that could be considered by such an expert panel for inclusion in legislation.

## The SAMRC Board

The SAMRC's Board is appointed by the Minister of Health, to whom the chairperson reports. The Panel did not investigate the workings of the Board in detail, but it appeared to be working better than it had been at the time of the 2010 SETI Review. However, some concerns were expressed about the degree of the Board's continuing over-involvement in operational matters.

It was noted by some of the interviewees that some members of the previous Board had over-interpreted their mandate, and had interfered in personnel and other operational or managerial issues. This, together with the weak scientific representation in the Executive Management Committee (EMC), has led to many policy problems within the SAMRC. For example, the newly adopted SAMRC policy on human resources management places emphasis on gender equality in hiring and promoting personnel. However, this has made it difficult for the Gender and Health Research Unit to hire women, especially African women, because the research this unit does is predominantly conducted by women. Even with the recent formation of a Scientific Advisory Committee (see below), the Board still gets preoccupied with technical issues and hence does not have enough time to focus fully on strategy and direction.

In terms of the MRC Act, the role of the Board should be focused on high-level guidance and oversight,

more specifically to 'determine the policy and strategic objectives of the MRC and generally oversee the performance of its functions, the exercise of its authorities and the execution of its duties'. The Board also appoints the EMC, which is 'responsible for the management of the affairs of the MRC in accordance with the objects and policy of the MRC'. The Board clarified its intended relationship with the EMC in a resolution adopted at a special meeting on 7 September 2012, which states that 'the Board is, in general, responsible for strategic direction and oversight, and the president is responsible for day-to-day management of the MRC'. This is in keeping with the principles of good corporate governance as described, for example, in the King IV Report.

The Board is appointed by the Minister of Health after consultation with the NDOH. Neither the EMC nor the rest of the SAMRC and its stakeholders have a voice in the selection and appointment of Board members, and this status quo is unlikely to change because it reflects a systemic policy for public entities. The Panel believes that this arrangement, which is also part of the 2004 sectoral arrangement for this focused science/research council as referred to previously, in essence weakens the Board's standing and scientific authority within the SAMRC community and outside it. In effect, the institutional autonomy assured in the same MRC Act is liable to be compromised in the prescribed appointment process of the Board, which does not seem to include any 'checks and balances' to ensure that a set of Board members will take office who are fully committed, in terms of their services to the SAMRC, to the mandate of the SAMRC as laid down in the Council's statute. This also does not ensure that the membership of the Board so appointed will include the necessary variety of perspectives and experience, and meet the requirement of being respected in the organisation for their stature and likely high-level contributions.

In making its findings and recommendations on this aspect of SAMRC governance, the Panel addresses the imminent revision of the statute of this particular Council. Insofar as the general model for boards of public research entities is the one more or less followed in the 1991 Act, the Panel is suggesting that fresh thinking may well be permitted in the context of a 'sectoral' science/research council such as the SAMRC. We suggest that a target is set that ensures that at least half of the Board's members are accomplished and experienced researchers and research leaders (perhaps using the H-index as one significant measure, but extending beyond bibliometric ratings to include the holding of senior institutional posts involving research management or leadership, national associations, rankings and awards, honorary degrees,

etc.). The other Board members should have experience of organisational strategy, public law, research management, communications and the bio-economy, in addition to the ex-officio members from the NDOH, DST, HSRC, CSIR and NAPHISA (once it is established). The Panel is also of the view that the SAMRC is not sufficiently seen as a large-scale research enterprise, or even as a 'business'. In terms of an organisation such as the SAMRC, the enterprise is as important as the science. One solution to this is to use some administrative funding to bring in experts on an ad hoc basis, as they are needed, for example, to develop an integrated business plan and support the president regarding the business development of the SAMRC.

The Board also needs to be better balanced to include 'visionaries' (persons with an interest in, and understanding of, the general trends, opportunities and dangers in a time of uniquely rapid technological and scientific progress) to help ensure that the organisation is looking forward in terms of its research programme, instead of simply making sure that the SAMRC is complying with the PFMA.

## Unit Directors' Forum

One of the recommendations of the 2010 SETI Review was the formation of an SAMRC scientific leadership forum as a general research-consultative body within the organisation, involving, at minimum, all the directors of the intramural and extramural units, but also a minority of elected representatives of other tiers of researchers in the organisation. The idea has since been implemented by developing an SAMRC Unit Directors' Forum (UDF), comprising intramural and extramural unit directors, and other senior SAMRC researchers as members. The UDF was established by the vice-president, in consultation with the EMC, to further the organisation's goal of enhancing organisation-wide consultation, coordination and communication.

The current mandate of the UDF is to:

- enhance communication and enable discussion of matters of research interest between members of the UDF
- discuss matters of mutual interest related to the management of SAMRC units and communication of these matters to the EMC
- provide a nexus through which the EMC can communicate and consult members on strategic research directions and new opportunities for the SAMRC, to feed into the thinking of executive management and the Board.

The Panel noted broad support for the retention and

refinement of this Forum, but a common complaint was that the potential of the Forum was not being maximised. For example, the unit directors could play a vital role in steering the direction of the SAMRC and in terms of foresight for future planning.

The Panel heard, as a consensus, that the UDF had a lot of potential, but it is perceived as under-performing. Some of the issues are that it tries to deal with both operational issues and the scientific component of the organisation. The Forum has also struggled to function because it has not had a fixed-period elected chairperson or any administrative support (in terms of minute-taking and meeting organisation); hence, there is a feeling of things 'falling between the cracks'. Some unit directors felt that there was a reluctance on the part of management to their making inputs in a meaningful way, which has had the effect of stifling expertise, creativity and innovation.

The Panel heard that the Forum had only met face-to-face a few times, and the feeling is that while the unit directors found the interaction very useful and refreshing, no real progress had been made. In addition, one vice-president position has been vacant for some time, which has resulted in a feeling of a lack of high-level channelling of opinion and a lack of momentum in the Forum. One option is to move to the SETI 2010 suggestion of a senate-style structure as is used in universities because more structured debate can be fostered and strategic options for the organisation can be discussed to be passed on to other decision-making levels. The lack of a formal forum has in effect been a 'glass ceiling' between the unit directors, and the EMC and Board.

The Panel understands that it cannot and should not 'think through' the details of a formal, institutional senior forum, but its advice is that the present UDF, while reflecting some real progress since 2010, is by no means a fully satisfactory solution of the senior communication problem in the SAMRC, specifically as a research enterprise that is very significantly also a 'steward' and 'champion' of 'research for health' in South Africa. One suggestion by the Panel is that concurrent cluster-type meetings could alternate annually with a general conference.

## Scientific Advisory Committee

In 2014, one of the findings of the ad hoc external review of the SAMRC was that greater scientific input was required to support the president. The Panel considered three functions that needed to be performed:

1. The provision of ad hoc and high-level scientific advice
2. Oversight of the outputs from SAMRC units and other fund recipients, and provision of advice on major funding decisions, including those related to establishing, continuing and closing units
3. The provision of scientific advice on the direction of the SAMRC overall, taking into account the most important developments in health science globally, and emerging ideas on understanding the performance and impact of health research that can be adapted to the needs of the SAMRC

In response to this recommendation, the SAMRC established a Scientific Advisory Committee (SAC) in October 2015, its terms of reference being to advise the president and the Board on the direction, quality and likely outcomes of research being performed within the organisation, or with its major support. The SAC would make recommendations, but the decision-making responsibility would remain within the SAMRC.

Selected SAC members were invited through an open and targeted process, and were identified from a broad range of sources, both nationally and internationally, from scientific societies, academia, science councils, research organisations, policy makers and the public. The terms of reference state that 'to preserve the independence of both the SAC and the SAMRC, SAMRC employees may not serve as members of the SAC'. However, comments were made by some interviewees that many SAMRC unit directors have a wealth of knowledge and as such, are well-placed to advise the president on scientific strategy. The Panel received the impression that there was little faith amongst, at least some, unit directors in the SAC being able to adequately fulfil its mandate of providing high-level scientific input enabling the president and Board to substantiate 'dead-ends' or other problems, and make sound, well-informed decisions.

Another drawback of the requirement that no SAMRC employee may serve as a member of the SAC is that the Committee may, due to lack of sufficient exposure, be unable to contextualise the SAMRC's units in terms of the broader setting of the organisation. Now that the SAMRC Board has a well-functioning R&D committee, the Panel is unsure what the role of the SAC is – it does not seem to give the SAMRC the value that it needs. A suggestion was made to look at one of the key concepts for managing research partnerships developed by the Council on Health Research for Development (COHRED). This organisation, inter alia, operates a 'research fairness initiative' (RFI), the goal of which is to raise awareness of and improve internal management processes for institutional policies and practices, and to develop

sustainable and fair partnerships. The SAMRC could benefit from implementing a similar scheme because there are both immediate and medium-term impacts for RFI users, prospective partners, and global research and innovation in general:

- Improved internal management processes
- Improved transparency
- Improved global learning
- Meta-analysis and ad hoc investigations of topics of current general interest

The Panel feels that the structure and function of the SAC needs to be re-visited. According to the terms of reference of the SAC, the Board initiates an evaluation of the SAC every three years, and will work with the president and the chair to review the mandate, activities, terms of reference and relevance of the SAC to ensure that it meets the SAMRC's needs. The SAMRC retains the prerogative to disband the SAC following such a review.

### Recommendations

1. The revised SAMRC Act should contain provision for a balance between extensive and demonstrable research experience, mastery and vision on the one hand, and a mix of specific and well-proven skill-sets on the other when constituting a Board for this public entity. The ex officio membership should be extended to include the NDOH, DST, HSRC, CSIR and NAPHISA (once established). Provision should also be made for consultation with the president of the SAMRC before the list of Board members is finalised by using the legal phraseology 'after consultation with ...', which does not remove the prerogative of the Minister of Health in making the appointments, but would ensure that s/he does so in full knowledge of the opinion of the president of the organisation.
2. The amended Act should also specify how the SAMRC president is to be appointed, the minimum requirements to be fulfilled and whether the president must be based in Cape Town. As to the requirements, the use of the word 'minimum' in this context should be focused not on restrictive 'external' features, but on the demonstrable potential for capable and visionary leadership of this particular organisation. Possession of a medical qualification should be considered a favourable feature of candidacy, but not an absolute requirement because the size of the competitive pool of candidates is more important than this criterion. The location of residence should also not be an absolute barrier, taking into account the ease of travel and communication currently.
3. Special attention should be given in the amended SAMRC Act to the manner and extent that the SAMRC Board can delegate functions and powers to the president and the EMC in general. The Panel advises that operational micromanagement by the Board should be eliminated altogether. It is critically important that a Board, such as the one recommended above, can optimally exercise its key strategic and oversight functions.
4. A group of advisors, drawn from the private sector, should be individually invited, on a standing basis, to assist the Board and president whenever this is needed.
5. A more formal arrangement of the present UDF should be developed along the lines of a 'senior forum' to assure productivity of and benefit to the organisation, with a periodically elected chairperson (not an executive) and adequate administrative support. The aim should be to foster fully debated inputs into strategy making in the organisation. There could also be another 'forum' devoted to research presentations, consultations and collaboration possibilities. This could alternate annually between clustered meetings and general conferences. These groupings could include those from other organisations to form national think tanks.
6. The Board should review the functioning of the SAC against its terms of reference to assess whether the Committee is best serving the SAMRC's needs. Additionally, the SAC may need a stronger mandate, process and structure because it does not seem to be functioning efficiently. The rotating chair seems to be problematic. The appointed chair should be a South African and should remain in position for the duration of his/her term. The Panel suggests that the president decides what she needs and moves towards an external advisory committee that will add significant value beyond the existing internal structures.
7. The SAMRC should consider becoming a partner in the Research Fairness Initiative (RFI) and become an RFI reporting organisation itself – and require/recommend that SAMRC partner institutions inside and outside of South Africa do the same – to maximise its leadership role in 'research for health'.



# CHAPTER 4

## OPERATIONAL ISSUES WITHIN THE SAMRC

This chapter addresses a variety of operational issues raised during this SETI Review of the SAMRC. Key matters that are addressed in this chapter include performance assessment and leadership issues, collaborations, funding, and human capacity. The SAMRC's strengths and weaknesses in respect of operational functioning are assessed, and the chapter concludes with key recommendations in this area.

## The organisational environment

As the term of the SAMRC president, Professor Salim Abdool Karim, came to end in March 2014, the SAMRC Board at the time took the initiative to begin its search for the next president. The Board appointed a committee consisting of four of its members and three senior representatives from amongst the SAMRC's key stakeholders to lead the search and selection process. Professor Glenda Gray was appointed as the SAMRC president with effect from 1 April 2014.

Since its inception in 1969, the SAMRC has had a number of laudable achievements and has had a significant impact on public health in South Africa. A review of the organisation by an independent panel of local and international experts in 1997 (the SETI Review) revealed that the SAMRC was a 'national asset', which was being successfully transformed to discharge its responsibilities and functions. Unfortunately, the reputation and scientific stature of the SAMRC steadily declined during the first decade of the 21st century, as highlighted in the findings of the second SETI Review in 2010, which recorded a number of deficiencies and shortcomings in the organisation. It has been encouraging, however, that since that review, with leadership provided by its current and recent presidents, the SAMRC has begun a sustained revival in terms of benefit to the nation, scientific output and enhanced credibility.

Noting that progress has been made, and there are areas of scientific excellence led by world-class scientists within the SAMRC, the Panel still observed some serious challenges that face the organisation. These include:

- a funding situation, where despite the annual baseline grant having been significantly increased since 2010, when it was considered too low to be commensurate with the SAMRC's mandated functions, the promising and strategically appropriate programmes that were initiated post-revitalisation as a result of new investment funds from the state are not certain to continue, let alone be extended, despite there being available to the Council a significant reserve of about R300m, something that is inappropriate for the Council's

- status as a Section 3A entity under the PFMA
- continued skewed allocations of funds, with detrimental effects particularly on extramural research
- inadequacy of the organisation in stewardship and championing of 'research for health' intended to address the country's health research priorities.

In 2015, the organisation addressed a critical aspect of its leadership challenge through the appointment of a full-time, full-term president, and the situation of having only one vice-president for both intramural and extramural units to that of having two vice-presidents. Since then, one of the vice-presidents has resigned and the organisation has been unable to fill this post at the required level.

Of particular concern at the time of the revitalisation process in 2013/14, in the face of the severe funding constraints, was that internal assessments showed a lack of rational prioritisation and ill-advised duplication of intramural research. For example, some intramural research focused on areas that did not feature among the common causes of ill health, while important causes of illness and death in children, notably pneumonia and diarrhoea, had no intramural research unit. The re-assessment of the SAMRC during the revitalisation phase led to a seven-point proposal to:

1. prioritise intramural research to focus on the most common causes of death and disease in South Africa, and their risk factors
2. increase funding to universities and medical schools to rebuild their health research, especially clinical research
3. create new funding approaches for the development of new drugs, vaccines and diagnostic tests
4. improve the efficiency and cost effectiveness of the organisation's administrative systems
5. improve the peer-review and quality of SAMRC research
6. address the laboratory and office space needs
7. improve the intramural library to ensure SAMRC researchers have access to the latest medical journals and other information sources.

The implementation process began in 2012/1013 by identifying the intramural units that could be closed. The units were identified using transparent criteria (including research excellence, productivity and strategic positioning, for example, in addressing the MDGs of the UN, and so on) and the decision was taken to focus on the remaining half of the original set of units. In the innovation environment, the SAMRC Innovation Centre was transformed into an entity called 'Strategic Health Innovation Partnerships' (SHIP), which is a funding and

project management division, the role of which is to fund new countermeasures to prevent, diagnose and treat priority diseases/health problems such as HIV, TB, malaria and non-communicable diseases. New SAMRC offices for HIV, TB and malaria were established to stimulate extramural research in these three areas. The Primate Unit and Delft Animal Centre was no longer an intramural research unit, but became an SAMRC platform.

Other revitalisation projects included several measures to strengthen science within the intramural units and within the university-based science environment. These included providing clear messages about the centrality of the need to produce knowledge in high-impact, peer-reviewed journal publications, which has resulted in greatly increased numbers of high-quality publications. Substantial funds have been leveraged to support innovation in HIV and TB, and to support flagship projects across the universities.

## Funding

Past distribution of SAMRC funding has not been explicit in policy terms. One of the changes of the revitalisation process was to redirect SAMRC funds to national priorities, in particular to focus the intramural units on the 'burden of disease', namely the leading causes of disability and mortality (measured by years of life lost and the number of deaths). This approach can be criticised for methodologically neglecting or underestimating some leading causes of prolonged morbidity that are not major direct causes of mortality (such as stunting in children, mental ill-health, including drug addiction and oral health, as well as the pervasive problem of common co-morbidities), potentially under-emphasising the importance of cross-cutting research to improve the health system and de-prioritising some disease categories, such as cancer, due to segmentation of cancer types and restriction of focus to just the top 10 causes of mortality.

The revitalisation report concluded that the disease-specific re-established intramural units, based on the top 10 causes of death, should be devoted to intense study of:

- HIV
- TB
- non-communicable diseases (chiefly stroke, asthma, diabetes and heart disease)
- injuries and violence
- childhood diseases (including malnutrition, and the main causes of perinatal and childhood mortality such as diarrhoea, pneumonia and meningitis).

However, an examination of what is currently being funded by the SAMRC in the intramural environment shows that this prioritisation was not the only guide to SAMRC funding decisions. The re-established intramural units also included six units and one centre devoted to meta-analysis to inform policy:

- Biostatistics
- Burden of Disease
- Health Systems
- Environment and Health
- Alcohol, Tobacco and Other Drugs
- Gender and Health
- Cochrane Centre

It is significant to note that the retained intramural units were simultaneously given a new 'lease of life' subject to evidence-based renewal decisions every five years, as is the case for extramural units. This has, however, raised the difficult question as to what the Council can do if an intramural unit underperforms in terms of such rigorous review. The staff of these units have permanent contracts and are unionised. In theory, units could be closed down or re-commissioned as part of 'restructuring', following the prescribed procedures of the labour laws, and the resulting redundant staff retrenched or redeployed. This would follow the recent precedent of the broad revitalisation process. What is clearly non-negotiable is that the intramural units must be treated in the same way as the extramural units are when it comes to quality and effectiveness in terms of their individual research mandates (see further discussion below).

The SAMRC, as a guideline, has set a formula for allocating its baseline resources: 40% for intramural research, 40% for extramural research and 20% for administration. These funds are currently supposed to flow in a number of directions that are each partly intramural and partly extramural (the research units, eight research capacity-development programmes, self-initiated research grants (SIRs), flagship projects and SHIP innovation funds). It appears, however, that 40% of the SAMRC's budget is in fact allocated just to the intramural units and 40% is shared among all the other streams, of which the intramural units are often also beneficiaries. This discrepancy needs urgent rectification in the Panel's view because the policy is quite explicit about 40% of the whole baseline budget going to extramural research.

The funding streams have different roles and limitations in supporting research, and achieving the best balance and synergy between them is one of the main strategic considerations of the SAMRC.

The above issues can be better understood if we briefly summarise the revenues of the SAMRC. The Council has

four major funding sources and two types of funding, and receives:

- baseline (public) funding from National Treasury through the NDOH for the core business of health research
- baseline funding from the DST for health innovation and technology development
- additional leverage funding both internally from the NDOH and DST (baseline) and externally through other national and international funders
- external grant (contract) funding that SAMRC researchers secure from national and international funders.

In terms of the funding types, the SAMRC accesses baseline and contract funding for conducting and funding health research:

- Baseline funding is secured through the Medium-Term Expenditure Framework (MTEF) process, which is an annual budgeting process through discussions with NT and the NDOH, with approval by the Board.
  - o Baseline funds tend to be adjusted according to inflation and are dependent on the fiscus.
  - o Additional funds from the fiscus are requested on a project-specific basis and/or to secure funding from other funders, but are subject to affordability and national priorities.
  - o Baseline funds are received quarterly and are managed against the Board-approved budget per line item to ensure that spending is appropriate and authorised.
  - o Variances to budget are analysed and explained through the monthly management accounting process.
- Contract funding is mainly project-specific and secured through responses to requests for proposals (RFP). Additional funds are also leveraged by researchers via collaborations with international funders and other research organisations on agreed areas of research or innovation, and result in new RFPs.

The SAMRC's total budget consists of the annual baseline grant and donor funding. Over the period 2012/13–2015/16, the total budget of the SAMRC grew at an average rate of 22.6% per annum from R576m to R1 067m. This is an increase of 85.2%.

Over the MTEF period (2016/17–2018/19), the SAMRC's annual budget is projected to contract at an average rate of 3.5% annually. This is a budget decrease of R108m from 2015/16–2018/19. The SAMRC's budget decreased by 3.6% from 2015/16–2016/17 due to the reduction in

research contract funding in 2016/17. In 2017/18, the SAMRC's annual baseline budget will decrease by 5.2% due to a R50m cut in the Economic Competitiveness Support Package (ECSP) and in 2018/19, the baseline allocation decreases by a further 4.8% mainly due to a cut of R100m in the ECSP.

Over the MTEF, the SAMRC will not receive additional funding, and the budget will decrease by R107m due to the termination of the ECSP in 2017/18 and 2018/19. Throughout the MTEF period, the aim of the SAMRC is to contain the expenditure of administration through the implementation of efficiency processes. The budget savings from these efficiency processes will be re-allocated to innovation and capacity development to increase the investments and outputs in these areas, which complement the core business of the SAMRC:

- Administration grew at an average rate of 7.9% and the average ratio of administration versus total expenses was 22.8% over the period 2012/13–2015/16. In 2015/16, administration constituted 18.4% of the total of the SAMRC's expenses. As part of the revitalisation process (as recommended in the 2010 SETI Review), the SAMRC started to review processes of support and administration with the intention to improve efficiency and effectiveness. This process is still ongoing and the anticipated outcomes of the review will ensure that administration will contract at an average rate of 2.5% over the MTEF period, whereas the total expenditure will contract at an average rate of 3.5%.
- Intramural research grew at an average rate of 14.7% over the period 2012/13–2015/16 and the average ratio of intramural research versus total expenses is 62.9%. Over the MTEF period, these rates will change to –2.6% and 59.2%. The negative growth rate is due to the termination of the ECSP in 2018/19.
- Innovation and technology grew at an average rate of 203.6% over the period 2012/13–2015/16, and the average ratio of innovation and technology versus total expenses is now 11.2%. Over the MTEF period, these rates will change to –7.8% and 18.2%. The negative growth is due to the termination of the ECSP. The increase in the ratio of innovation and technology versus total expenses is due to the leverage funding the SAMRC will receive through baseline investment.
- Capacity development grew at an average rate of 83.2% over the period 2012/13–2015/16 and the average ratio of capacity development versus total expenses is 3.2%. Over the MTEF period, these rates will change to –0.3% and 4.1%. The



ratio increase is due to an increase in investment in research projects at historically disadvantaged institutions (HDIs) and the training of clinical researchers.

The above is evidence that after the revitalisation process, the SAMRC is now in a much better position than it was at the time of the 2010 SETI Review. The SAMRC is better positioned, more focused and efficient, and is better placed to contribute to a 'healthy nation through research'. In revising its funding strategy, the SAMRC has allocated substantial funds for a variety of existing and new funding mechanisms for health research and development in the country. However, the issue of the overall baseline under-funding was raised repeatedly during the Panel's interviews. It is the strong view of the Panel that the SAMRC needs a much higher level of baseline funding to meet its research mandate and achieve its full potential to benefit the country. The SAMRC's budget cuts speak to a potentially significant decline in health and health services. The problem is that National Treasury will likely find it difficult to increase the allocation unless the economy begins to show growth again.

There is a danger that the SAMRC may conclude that it should go 'cap in hand' to the NDOH to ask for the money that it needs in global terms. Instead, it should go with specific imperatives and programmes, with clearly specified objectives and opportunity costs in each case. (The likely imminent discontinuation of the successful 'flagship project' programme is a case in point, as is the waning of support for the Clinical Scholars Programme. Partly because of this, the SAMRC is increasingly relying on the DST's cross-cutting innovation mandate to fund health-related issues.) The Review Panel believes that a deeper issue is the cause of the present budgeting dilemma: the budget is not primarily established as it should be based on the mandate that the SAMRC is supposed to be performing, since that mandate is out of date because of the continued reliance on a 1991 Act of Parliament, and much has happened and is still happening (NAPHISA) since that time, as we noted earlier on in this report. A budget must be based on the most important budgeting tools, the mandate of the organisation, changes in the environment and cost structures, and clear demonstration of impact.

In order to be successful in securing additional funds from the NDOH, the Panel feels that the SAMRC needs to have properly focused justification in order to make a convincing funding case to the NDOH. Working with the NHRC would clearly be helpful in this regard. The SAMRC needs to clearly outline what it cannot do because of inadequate funding, and what valuable, productive

programmes may be lost if there is a significant funding decline. This description also should highlight the impact that the loss of specific programmes would have on individual scientists, academic institutions and the overall process of social transformation in the health research and training sector. The organisation needs to outline the gaps in health research and how the SAMRC could fill them, i.e. what the country is missing. It would also be useful to put a monetary value on this so that the NDOH can quantify the return on investment and see what the cost of not doing the research is. Crucially important is to resolve the issue of whether it is justifiable to continue to grow the reserve funds in the face of known Treasury objections or whether the reserves should be 'capped' at a clearly justifiable level and the balance used to meet unmet funding demands for essential programmes.

The SAMRC's baseline funding is solely at the discretion of the NDOH, and so the organisation does not have the ability to ensure that the national 'research for health' agenda is provided with all the forms of support that are accorded to the CSIR, HSRC and universities in terms of, for example, systemic infrastructural and capacity-building programmes directly funded by the National Treasury. The view of the Panel is that the SAMRC needs to be proactive and seek inclusion in such programmes, in addition to its urgent need for improved baseline funding concentrated on specific needs and a record of delivery.

One possibility is to take a leaf out of the NIH's book in establishing a special foundation within the organisation that is focused on raising funds for its research programmes. Increasingly, research entities across the world are establishing offices, the function of which are to raise donor money for the organisation. Another possibility is to establish a special purpose vehicle (SPV) for revenue generation because, due to its Section 3A listing in the Public Finance Management Act, the SAMRC cannot formally budget for a surplus (although it may well be possible to negotiate with the Treasury for permission to raise additional revenues through a foundation or trust). The money generated through the SPV could then be directed to research support and capital expenditure. In connection with this, the Panel agreed that it would not be advisable for the SAMRC to seek Section 3B status because this could possibly jeopardise the sustainability of the SAMRC's baseline funding. In addition, it is the view of the Panel that it is not the role of the SAMRC to be a commercial entity; rather, its responsibility is to fund 'research for health' projects that push research boundaries and create innovative products even though they may not offer a rapid return on investment.

## Intramural and extramural units

In discussions, the Panel found it difficult to discern a clear distinction between the intramural and extramural units with respect to their value to the SAMRC and the nation. For example, some extramural units appear to be playing an essential and long-term function. Extramural unit funding is limited, and in most cases only a small proportion of the overall funding that productive extramural units receive. Despite that, the SAMRC funds provided to extramural awardees appear to have several main roles: they are source of prestige and enable work continuity over many years, they are valuable for leveraging other funds, they fund essential positions that are often difficult to support through individual grants (such as research administration and technicians), and they provide funding for items that are not covered by other grants (it is the highly valued flexibility of the award that allows this). The current extramural units leverage between 2 and 50 times the funding contribution they receive from the SAMRC. While this factor appears beneficial given the comparatively small contribution from the SAMRC (and indeed this is true for most of the extramural units), it has meant that the Council has been able to 'take credit' (in reporting and reputational terms) for work mostly funded from other sources, including substantial infrastructural and other contributions from the host institutions.

The positioning of extramural units within universities also enables them to capitalise on human and institutional resources of a larger and more diverse research community, and signifies a lower investment by the SAMRC, and hence a much greater return on that investment in terms of outputs. In this context, the case for having intramural units at all is the enablement of strategic, longer-term commitments that are not being substantively met extramurally, opportunities for direct steerage of the research needed to address neglected national health needs, and greater inclination and resources for engagement in activities related to research translation and policy formulation.

Putting the case for intramural research in this way has obvious implications for how the intramural programme should be operated – establishment of an intramural unit should require a clear demonstration that a necessary research programme is unlikely to be set up extramurally; that mechanisms for periodic review and deliberate steerage are in place; and that the mandate of the selected intramural activities must include considerable research extension in the form of translation, policy development and public engagement. The potential for overlap between the intramural units and that of some of the activities of the to-be-formed NAPHISA need to

be clarified because both organisations will be pursuing this point.

It is current policy that extramural units have a maximum lifespan of 15 years (three 5-year cycles, each concluded with a robust review processes). While the reasoning behind this policy is clear, it appears that the policy is implemented inconsistently. Even though annual SAMRC funding for extramural units is limited to between R1.0m to R1.5m, this amounts to a considerable investment over the lifetime of most of the units. Hence, it is essential that the performance of extramural units also be actively monitored, but not directed by the SAMRC. The SAMRC's responsibilities also include creating opportunities for new extramural units to compete for funding through an open merit-based process of application, peer review and oversight. Some such units should address high-priority research areas, including those focused on a number of pervasive non-communicable diseases, and nutritional and mental health problems, which are not easy to fund through international and/or alternative local sources, and hence are relatively underfunded in South African research.

The Panel has noted the extensive overlaps between the SAMRC's system of extramural units and the DST/NRF Research Chairs initiative. While these undoubtedly usually lead to useful synergies, and helpful swelling of funding streams and complementation of resources, it is possible that a greater degree of strategic planning and coordination between the sponsoring organisations would provide steerage opportunities to ensure adequate funding of some otherwise neglected areas of research priority.

The Panel learnt that some directors of extramural units were unclear about what the SAMRC expected of them. Although Annual Report contributions are required, little or no feedback is given to unit directors about these. There is a lack of unit directors, both intramurally and extramurally, taking up national leadership roles. A possibility to be considered is that the extramural unit directors should become more involved in this activity because they have the same scholarly authority as the directors of intramural units, of whom this is (or should) be a standing requirement. As a stipulation of receiving their SAMRC grant, the organisation could make it mandatory for extramural directors to become actively involved in relevant national settings – this would put more emphasis on the systemic role of the extramural units so that they would cease to be considered in some quarters as a 'cheap way for the SAMRC to get publications'. They would in effect begin to contribute more substantively to the core function of the SAMRC – its national stewardship and championship function.

The arrangement would also have a major additional benefit: the SAMRC would deliberately improve two-way communication between itself and the units, and enable the latter to contribute to the more strategic thinking of the SAMRC.

It goes without saying that resourcing of national activities by extramural units should be taken on by the SAMRC, and not expected to be covered by the small unit grants currently available.

From the interviews, a general consensus Panel view emerged that some of the intramural units are under-performing and the concern is that science of a high enough quality is not being performed in terms of their mandates, either because these mandates are too broad to be covered by the relatively small teams involved, or because the mandate was not properly selected initially on the basis of policy criteria, but carried forward from a previous era, or because the leaders were temporary or did not meet the requirements of unit directorship as were meant to be applied in the whole organisation, or because of a combination of these reasons. In total, it was estimated that about 50% of the staff of the 11 intramural units could be seen as performing sub-optimally because they were not conducting ground-breaking or significant research. An indication of the degree of stasis at 'comfort levels' is the apparent poor communication and cooperation between members of intramural units who are working in areas that should lend themselves well to joint exploration. The Panel learnt that it was difficult to hire young and promising researchers because current 'permanent' post-holders were not leaving. Bringing in 'new blood' was a problem because it was generally difficult to establish additional posts, although the SAMRC has several initiatives (see below) that are helping to address this problem. The Panel feels that the SAMRC should find ways to resolve these issues at the core policy level because the opportunity costs are huge of not being able to invest in strong intramural units and strategically establish new ones. The Panel also suggested that the SAMRC might consult with health research-funding organisations in other countries to consider adopting methods they use to assure high-quality intramural programmes.

In this context, the Panel was surprised to learn that the intramural units are not subjected to the same rigorous periodic reviews that the extramural units are. As already stated, the Panel is strongly of the view that the intramural and extramural units should be treated in the same way with respect to quality assurance and steerage. All external unit reviews should have a clear set of criteria that are given to the relevant unit director well in advance. The reviews should be conducted by respected peers

from the same or cognate research areas. The whole process should be open and transparent. In the case of extramural units, a negative review would be followed by non-renewal of funding or urgent remedial measures required. As previously discussed, the difficulty is what the consequences would be if an intramural unit was found, after rigorous review, to be under-performing. The unit could be closed and staff retrenched with negotiation with the union. Alternatively, some interim measures could be put in place where the unit director is given the chance to uplift the unit within a specified time. Executive management apparently anticipates that there would be serious resistance to making major changes in staff internally because the 5-year reviews of the re-established intramural units would all coincide, and the last large-scale round of retrenchments that resulted from the revitalisation process is still fresh in everyone's mind. In addition, negotiating the requirements of labour legislation will result in a heavy administrative workload. Another option would be to reduce the budget of a unit shown to be performing poorly.

A possibly helpful measure, used by the CSIR Biosciences Division, may be to re-name and reorganise the intramural units as flexible 'platforms' that can shift staff with particular skills and re-training potential temporarily from one platform to another; re-direct them into new endeavours; share skills, equipment and infrastructure more broadly; and be more amenable to steerage from without. (The Panel has noted the deficits incurred by this Division and the resulting recent retrenchments, but believes that these difficulties are not necessarily associated with the project organisation model itself.) An alternative, more radical approach mooted in Chapter 2 is to restructure the entire intramural programme as one or more 'national research institutes' dedicated to a high-priority area requiring consolidation and integration into wide domains of national development.

The difficulties related to performance are linked to the need for a community-wide acceptance of the criteria for good performance by a unit. A common theme emerging from the interviews with directors of both intramural and extramural units was that undue importance was attached to the number of peer-reviewed publications, their citations and especially the journal impact factors concerned, including the elevation of a small group of high-impact, multi-disciplinary journals to a distinctly favourable, even essential criterion. The interviewees agreed (as did the Panel) that the publication of 'high-impact' papers was a clear aspirational target that was accepted by the whole SAMRC research community, but that it was necessary for a more up-to-date view of these indicators to be taken. For example, it is now generally accepted that large numbers of citations over long periods to individual papers is a far more reliable

indicator of impact than a journal impact factor. This also elevates H-indexes to a higher place in the range of criteria. In any case, journal impact factors should be expressed in field-specific terms because different fields of research have vastly different overall citation rates and therefore impact factors of the best journals in the fields concerned are also different. Many composite impact determinations are now available, and the role of various indicators of significance can now be dissected and aggregated. Another point is that review articles, by their very nature, collect many citations. Natural science journals generally have higher impact factors than social science journals because of the short and recent time window used for the determination – the latter group of disciplines typically collect citations over long time periods. Interestingly, this has been shown to be true also of truly ‘innovative papers’!

Additional concerns are the following:

- The methodology for calculating impact factors is not transparent or openly accessible.
- An impact factor is the average calculated across different types of papers, including articles and reviews.

- Impact factors may be gamed by editorial policy, for example, encouraging citation of the journal’s previously published papers.
- Citation rates within journals are highly variable (all journals include articles with low and high impact).

In summary, the Panel strongly advises the use of modern article-level, multiple-indicator bibliometrics.

The Panel further feels that it is essential that there is a broader assessment of quality in output reporting, and that the SAMRC should not just count and assess publication outputs. The successful supervision and graduation of postgraduate students is an important contribution – particularly with a focus on the research agenda – as is the translation of a research finding into improvement in patient care or disease diagnosis and prevention.

The following table provides an example of how outputs/ outcomes can be diversified and metrics that could be used as performance indicators.

**Table 1: Alternative performance indicators**

Evaluation framework measure	Suggested measure	Evidence	Considerations for implementation
Generation of new knowledge	Bibliometric field, weighted citations	<ul style="list-style-type: none"> <li>Published output with SAMRC acknowledgement</li> </ul>	Impact factor (short term); H-index (across career)
Trained people	Number of postdoctoral fellows, PhD and MSc students supervised	<ul style="list-style-type: none"> <li>Degree completion rates</li> <li>Research career success of supervised students</li> </ul>	Definition of career 'success'
Development of collaborative networks	Number of evidenced collaborations	<ul style="list-style-type: none"> <li>Co-authorship, co-funding</li> <li>Exchange of expertise</li> <li>Access to facilities or research materials</li> </ul>	Collaboration across disciplines, e.g. including basic scientists and clinicians
Leveraged income	External funding won as a result of SAMRC support	<ul style="list-style-type: none"> <li>(Co-) applicant on award that supports research</li> </ul>	May wish to capture 'in kind' contributions
Intellectual property	Proportion of licensed IP, income	<ul style="list-style-type: none"> <li>Granted patent families</li> <li>Licenses agreed</li> <li>Returning income</li> </ul>	Importance of patent also requires scrutiny
Research materials, technologies	Number adopted by academic and commercial partners	<ul style="list-style-type: none"> <li>Material transfer agreements</li> <li>Software</li> </ul>	Reference by or use by other organisations, royalties/income
Influences on policy	Number of policies or contributions to policies	<ul style="list-style-type: none"> <li>Policy documentation</li> <li>Use of research in policy documents or training interventions</li> <li>Practice change due to research findings</li> </ul>	Research and significance
Development of new products and processes	Description of new products	<ul style="list-style-type: none"> <li>Products categorised by developmental stage/type</li> <li>Clinical trial registration</li> </ul>	Products themselves may be an output of earlier research
Dissemination of research	Number and nature of engagements with stakeholders	<ul style="list-style-type: none"> <li>Participation in stakeholder meetings</li> <li>Policy briefs</li> <li>Media interviews</li> <li>Webpages</li> <li>Conferences/seminar organisation</li> </ul>	Translation to non-academic audiences

The Panel thus agrees with the view that while publications are important, their impact should be more thoroughly assessed and that other measures should also be included, leading to a more holistic measure of overall impact on health in the country. The performance evaluation of units (both intramural and extramural) should be based on a basket of contextually appropriate indicators that include the goals of the SAMRC, including 'impact on health' or 'equity' or 'economic effect'. There needs to be complete transparency and evidence

throughout the review process, and a redacted version of the report should be sent to the unit. This will help the units see how the 'grant bonus' is calculated each time. The bonus could also be set for a period of five years, which helps with the predictability of funding if a unit is doing very well. The other indicators mentioned above, including students graduated, impacts on health systems, transformation, cooperation, collaboration and leadership, fit into the SAMRCs' mission and mandate.

## Procurement issues

The Panel was confronted by many complaints about the logistic problems caused by compliance with the procurement regimen for public entities specified by the National Treasury. These included delays, inappropriate purchases and procedures or requirements that elevate costs, both absolutely and in terms of opportunity. We were informed by the CSIR Biosciences Division that an application for contextual exemption directed to the Chief Procurement Officer of the Treasury had in fact been successful; this may be a way out of the current problematic situation.

### Recommendations

1. When requesting funds additional to the baseline from the NDOH, the SAMRC should prepare coherent arguments, provide statistics and create case studies of impact, including assessments of the cost of not doing the research. (But see 'Recommendation 3' of Chapter 2 concerning baseline funding.)
2. Consider establishing a special foundation that focuses solely on raising additional funding for the SAMRC.
3. All units, regardless of whether they are intramural or extramural, should undergo regular (we suggest 5-yearly) reviews undertaken by properly constituted panels comprising eminent researchers in the relevant field of research using clearly described assessment criteria well known in advance of the review. At the reviews, in addition to their recent accomplishments, all units should be asked to present their completed and current research. They should also be asked to present their strategic vision and projected outputs for the coming five years. These should be tailored to the context in which the units operate and the units should be held accountable for achieving these. Suggestions of consequences have been given, but ultimately, this must be an SAMRC-led process because of the legislation and goodwill of the staff involved.
4. The unit directors of the SAMRC-funded extramural units should be expected to contribute to strategic thinking for South Africa and towards long-term thinking about research development. The SAMRC should create a mechanism to tap into this source of creativity and leadership.
5. Additional indicators, other than the number of papers published in journals with specified impact factors, should be included when reviewing the performance of units. Indicators, for example, should include H-indexes of senior unit authors, field-specific journal impact factors, article-level metrics as are being pervasively developed, student graduations at different levels, authoritative policy papers and similar, and outreach activities that show visible results. Locally relevant indicators need to be considered to focus on the specific mission of the SAMRC in contributing to achieving South Africa's national health, transformation and development goals.
6. Thought might be given to changing the intramural research programme to a series of 'platforms', providing greater flexibility of management and rational use of resources. Alternatively, the more radical idea of establishing one or more 'national research institutes' in key areas important for community development might be entertained.
7. A fully contextualised application to the Chief Procurement Officer of the National Treasury should be made for exemption from the burdensome and inappropriate procurement rules otherwise prescribed for the SAMRC.



# CHAPTER 5

## BUILDING THE NEXT GENERATION, ENHANCING CAPACITY AND TRANSFORMATION

The SAMRC endeavours, within its resource base, to provide the person-power to develop and perform high-quality and relevant health research in South Africa. The Council has a number of ongoing research and career support mechanisms, and continues to enter into new partnerships with local and international partners to bring in additional funding to support scientists at all stages of their careers.

## Scholarships

The majority of SAMRC funding in this category is currently provided to clinician PhDs and this is strongly supported by stakeholders who perceive that this meets the country's urgent need to train more clinicians in research. It is also generally felt that PhDs are better investments than Masters students, although some doctoral students also fail to complete their studies and others do not pursue a career in the health sciences.

Many of the interviewees were frustrated about the difficulty in retaining PhD and Masters students after they have completed their degrees. A lot of time, effort and money is invested in training these postgraduates only for them to leave because there are no posts, and they are forced to seek better opportunities elsewhere, often abroad.

To prevent losing trained researchers from South Africa, and from the SAMRC in particular, a longer-term and inclusive strategic plan is needed. The SAMRC should consider developing postdoctoral funding (perhaps in partnership with universities) so that there is a mechanism to develop students into mature scientists. From here, the best scientists from within a field can be selected and set up as extramural units.

Due to the request from the Minister of Health that the SAMRC should aim to train 100 PhDs in a spectrum of clinical disciplines each year, the organisation has had to take funding from supporting Masters students and put this towards augmenting the funding of PhDs in order to reach this target. The Review Panel believes that this is not a wise approach. There is in fact, in the strongly developmental situation in which South Africa finds itself, a good case for assisting excellent Masters students who can begin their careers and enter the growing 'Knowledge Economy' by populating the 'middle-level scientist/technician' level. The SAMRC president should be able to modify the '100 PhDs' aspiration into any ratio of Masters to Doctoral levels that is most effective in both transformation and capacity development, including considering labour market evidence.

The 'National Health Scholars Programme', funded by the private sector's 'Public Health Enhancement Fund' through the NDOH, is intended to be a major vehicle for the '100 PhDs' effort (selection is conducted by the NHRC). The original funding plans are not being sustained, however, and this needs to be addressed urgently by the NDOH.

The Panel heard from a number of sources that with the increase in countrywide funding for PhDs, there are an increasing number of such graduates and postdoctoral fellows who are unable to find suitable positions. This is a result of poor career progression planning in the human capacity development programmes, and their funders and partners in the universities and research/science councils. We are aware that the SAMRC has already tackled this issue through four career development training programmes that pay a mentor and provide enough funding for research for three years.

The point was raised during the interviews that the reason why postdoctoral fellows are not being absorbed into the market as they should be is the questionable quality of the PhD and not the number of fellows. The Panel considered this to be a point requiring further systemic investigation. One way to ensure the quality of Masters and PhD degrees is for the SAMRC to award a postgraduate study grant. It should negotiate with the institution concerned to add to the terms of the award agreement that it has the right to appoint one examiner. If this is not administratively possible, the right to scrutinise the examiner's reports should be insisted upon.

The SAMRC should consider more support for MD-PhD programmes of study in situations where universities are willing to make the necessary curriculum arrangements. It should also recognise that adequate grant support for supervisors is an important part of making the doctoral- and postdoctoral-stage programmes work.

## Mid-career awards

Mid-career awards have been enthusiastically welcomed in the SAMRC system, although the Panel heard requests for the grants to be larger and for there to be more of them awarded each year. Providing support for mid-career scientists is good value for money because they are committed to their research careers and the cost is lower than that for supporting more senior scientists.



## Self-initiated research grants

Self-initiated research grants (SIRs) support emerging and established researchers, usually with PhDs or equivalent clinical qualifications. The universal peer-review model used for selection of grantees (while defensible in some ways) appears to be inefficient and promotes 'reviewer fatigue', especially considering that the awards are rather limited and they inevitably have to be supplemented with funding from other sources.

The Panel is of the opinion that the SIRs are one of the big problems in the continuing imbalance between the extramural and intramural research programmes. We strongly recommend at least a doubling, if not a trebling, of the annual quantum for SIRs, fair criterion-based pre-screening to eliminate poor proposals, and awards that make a real difference to the recipients. These grants are very cost-effective because applicants come with their own salaries, infrastructure, students and appropriate 'research ecology'. Efforts should also be made to increase participation in international programmes such as 'Rising Stars' and the 'Exploration' awards of the Grand Challenges Programme of the Bill and Melinda Gates Foundation, and the joint research programme that supports highly meritorious collaborative research projects with co-funding from the NIH in the USA.

## Historically disadvantaged institutions

As a Panel, we strongly endorse the importance of transforming the South African science system and achieving distributional justice. In addressing this, the SAMRC prioritises candidates from historically disadvantaged institutions (HDIs) for PhD scholarships, early- and mid-career awards, and SIRs. However, the Panel also notes that over the past 20 years, the apartheid-era alignment of university and staff race has altered, and students from previously disadvantaged backgrounds are increasingly being drawn to established centres of excellence for higher degrees and postdoctoral research wherever these are found. Unfortunately, centres of health research excellence in HDIs are unusual, and so they lack the necessary resources and geographic location to build them up.

A recommendation of the 2014 external review of the SAMRC was that the organisation should work with HDIs to assist them in identifying and overcoming institutional impediments to the growth of research, and enabling access to projects of world-class scientific endeavour (through direct funding or collaboration) within which capacity can be developed. The Panel wishes to

congratulate the SAMRC for its recent steady and beginning-to-be-effective interventions at Fort Hare, Walter Sisulu and Zululand Universities, from which much has obviously been learnt.

Historically, the SAMRC has stayed away from broad institutional capacity building and has instead focused on research funding and the targeted training of individuals, mainly because the organisation does not have the resources, the expertise nor the mandate to build institutional capacity at HDIs. If this is indeed the case, then one answer could be for the SAMRC to seek a strategic partnership with the Department of Higher Education and Training (DHET), the South African Research Information and Management Association (SARIMA) and the DST for institutional research capacity building at HDIs to help leverage funds and external expertise, which would not then compromise current research funding. A possible outcome of this could be the creation of a post for a vice-president at the SAMRC responsible for Strategic Goal 4 (capacity building), with a small team and sufficient operational costs as a joint effort with the DHET and the DST.

The SAMRC currently has a ring-fenced pool of funding for HDIs of R10m per annum. The Panel learnt that this would increase as the HDI development programme is extended. The organisation wanted to start the programme on a small scale because it wanted to start a complete and sustainable development programme, and this has taken some time to implement. The Panel recommends that the HDI programme be taken to scale as soon as this is feasible. One suggestion was, together with more established researchers, to co-invest and co-support some of the research programmes in the HDIs. The Panel was told that the SAMRC's experience was that HDIs tend to be used as a 'front' in partnerships with more established universities. However, this simply does not work because HDIs eventually falter because of a lack of internal support. For this method to work, there must be buy-in from all sides, with the HDIs accepting help while committing to building infrastructure and research management capacity, and the more established institutions being fully committed to transferring knowledge and skills. The Panel further learnt that the only HDI to be ranked in the top seven research universities in the country was the University of the Western Cape. One of the main drivers of the improvement at this institution was its partnership with the University of Missouri, and the frequent and planned occurrence of sabbaticals in both directions. This provides the necessary exchange of ideas and skills, and is obviously a very promising avenue of institutional research development. This model of partnering with external organisations, even outside South Africa, should be further explored as an option to enhance

HDI through sustained, multifactorial mentoring and partnership focused on research.

Beyond this ring-fenced pool for HDIs, the Panel recommends that prioritising the quality of science should continue to be the main criterion for allocating resources because this will serve the long-term interests of health sciences in South Africa and will ultimately achieve sustained transformation of the science system in the context of multiple affirmative action mechanisms.

## Transformation/Training

One of the main problems with implementing transformation within an organisation is first agreeing on what 'transformation' means from the viewpoint of major stakeholders and then deriving a coherent model that can accommodate the key issues from all. A transformation strategy for the SAMRC should:

- be aligned to the overarching organisational strategy
- consider stakeholders' expectations
- consider performance relative to peers
- be practical and the impact should be measurable
- determine the position and impact of the organisation within the country
- lead to added benefits
- create shared value.

The Department of Labour has recently published an equity report that has evoked considerable public interest. It is evident that while some progress has been made at more junior levels, there is still insufficient penetration of the higher echelons in the private sector and in the technically specialised areas of the public sector such as universities and science councils. At the same time, however, there seems to be a lack of an effective strategic response that could actually make a difference, and unfortunately, there is no 'magic wand'. It is evident that the profile of entry-level researchers is changing rapidly in the SAMRC. The main problem seems to arise at the more senior levels, such as unit directors, and this will take at least 10 years to change significantly. The SAMRC should work with other research councils and higher education institutions to expedite this process and expand the pool of candidates using a coordinated initiative.

Currently, transformation occurring within the SAMRC seems to be based mainly on the medium-term approach centred on mentoring and training. There is no clear workable strategy for faster change. In order to implement a successful transformation strategy, the SAMRC should consider creating a team of people

who understand transformation in the context of the particular situation of the SAMRC. A good starting point could be to visit other organisations that have the same responsibilities as the SAMRC, but in other research areas and see what they are doing. The strategy can then be based on best practice rather than intuition.

The efforts that the SAMRC has made regarding transformation at the highest levels are informative. A particular need is succession planning. For example, when the vacant vice-president's role was advertised, no suitable candidates applied; the requirements laid down by the Act and the Board were possibly too stringent and risk-averse. The president of the SAMRC has to be a medical doctor, and this requirement has apparently been extended to the two vice-president positions. For these positions, an outstanding scientific background is also mandatory. At the time of recent advertising for the vacant vice-president's post, only two people in the country were qualified by the criteria to take the position. A basic principle of transformative recruiting is the largest possible pool of talented candidates of all backgrounds who could make a success of the position. In this context, there seems to be no place for largely outmoded thinking and artificial constraints in enabling the SAMRC to take the leap into a new future. The real requirements for leadership of the Council are a deep and demonstrable understanding of how good research is conducted and promoted, people and communication skills of a high order, integrity, and business/organisational skills.

To address this issue, the SAMRC has created four positions for deputy directors (capacity development positions) to fast-track suitable (high-potential) people for succession planning to replace unit directors who are about to retire. The SAMRC is currently in the position of developing more posts like these. Additionally, senior transformation and capacity development have been added to unit directors' KRAs in order to speed up this process and ensure it happens at an organisational level.

## Expanding clinical research capacity

The ASSAf Report identifies clinical research as '... research primarily conducted with human participants (and on material derived from them such as tissues, specimens and cognitive phenomena) during which investigators examine mechanisms, causation, detection, progression and reversal of human disease'.

Such research, which falls squarely within the SAMRC's public mandate in South Africa, contributes to health care at all levels by identifying the causes of problems,

facilitating diagnosis, improving the efficiency and effectiveness of care, and promoting good policy-making. It also supports the training of competent health professionals of all types, and contributes to global knowledge about nationally as well as generally prevalent diseases in terms of prevention and treatment. It is a particular necessity in the light of the imminent implementation of the National Health Insurance (NHI) scheme.

We believe it is true to say that the future of clinical research in the country (a core endeavour in building an adequate health system for the population) depends to some extent on the SAMRC's ability, working with other funders, to meet the requirement of the Minister of Health to fund 100 clinical PhDs per annum in South Africa as a whole. To achieve this, the SAMRC will need to coordinate and integrate the contributions of all funders in this area, and help mobilise further support from the NDOH and the Public Health Enhancement Fund, as well as more directly from industry, universities and external sources.

Some clinicians with large foreign grants have been able to cover their own salaries, i.e. they have 'bought' themselves out of the severely inhibitory provincial restrictions. These clinicians have often gone on to form the successful existing clinical trial centres, which seem to be recognised merely as places where funded research can be conducted and not where clinicians can be systematically and broadly trained; they also do not seem to be adequately resourced. The SAMRC should be able to do what foreign grants do: namely, to offer sufficient funding to these world-class clinical scientists so that they can spend much more time on research and leading teams of researcher-clinicians. The current level of funding of 'units' and even of 'research chairs' is simply insufficient to achieve this. The SAMRC thus needs to enter into partnerships with the operators of the existing ad hoc clinical research/trials centres, and participate in business plans to enhance their capacity to train people and undertake a broader range of studies. This is unfinished business from the 2009 ASSAf Report on Clinical Research and the following 2011 Summit of Research for Health stakeholders.

One of the main reasons for the decline in clinical research capacity is the cost involved. Clinicians' salaries would have to be met in order to attract them away from practice and into research. One way to expand the clinical research capacity in the country would be for the SAMRC to put out a call to universities and hospitals asking for research proposals from registrars who are interested in conducting the research they need to perform in order to qualify as specialists. The SAMRC could then ensure the placement of selected clinicians

in laboratories with principal investigators willing to train them. The SAMRC would provide the project funding, thus assisting the host laboratory; the salary would not be part of the project cost as it would be part of the registrar employment contract. This approach would, of course, require collaboration and partnership between the SAMRC and academic hospitals around the country. At the end of the research period, the clinician would be much more likely to continue with research because of the structured introduction.

There may be reluctance on the part of the provincial health departments to release registrars on salary for research projects, but in terms of the above-mentioned proposal, the negotiations would be up to the SAMRC to create an understanding of the logic of the scheme. The Colleges of Medicine and the Health Professions Council of South Africa would also need to be convinced that 'team research' conducted by registrars is as important, if not more so, than each single 'own' project for an M Med degree. The advantages would be more continuity, more sharing, and more meaningful research that would be tackled, making it more attractive for M Med students/registrars to do proper research and possibly choose a research career.

Once clinicians have had sufficient time to become an expert in their fields, they will be aware of key clinical development areas in need of research in their fields of work – and many will have reached the stage at which research becomes more attractive than continued clinical practice. Therefore, the SAMRC might establish funding for mature clinicians to continue with research careers or begin a second career as researchers. (Perhaps such an approach could initially focus on support sabbaticals.)

## The special problem of disciplines in trouble: the pathology disciplines and the NHLS

There needs to be understanding that 'clinical research' is not a homogeneous field. Some groups of disciplines included in this rubric may have particular problems or crises at certain times, and for certain reasons, that other disciplines have escaped. This is part of the 'observatory' function that is still poorly developed in the country's health system and for which the NAPHISA/SAMRC partnership we have recommended is a preferred solution.

A good example of this is the inclusion of the 'academic' aspects of the pathology disciplines in the otherwise totally service-based NHLS, thereby problematically linking the fortunes of these core health research areas

to the public sector, stand-alone model of a fee-for-service organisation required by its statute to break-even in terms of revenues against expenditures. Severe cash-flow problems have thus been associated with frozen academic posts, especially registrar posts, hindering the education and training of a new generation of specialists who could contribute to 'research for health' in key areas other than the already well-developed HIV and TB research programmes. In a recent graduation ceremony of the Colleges of Medicine of South Africa (COMSA), only a handful of specialists graduated in the pathology disciplines, compared with vastly greater numbers in most other clinical disciplines.

The Review Panel was reassured to learn that the financial model of the NHLS had been changed to prevent or mitigate the basic problem of non-payment of provincial fees, and that all frozen posts had been released for immediate appointments. (Recent reports have, however, suggested that these measures have either not been implemented or have been ineffective in correcting the problems in the organisation.) It is evident that the inability of the NHLS to fund research on a significant scale from its 'trust' funds makes it necessary for the SAMRC to pay special attention to these disciplines, and to foster a balanced approach to the growth of capacity in the different sub-disciplines.

### Recommendations

1. The new SAMRC Act, the SAMRC Board and executive management should observe the basic principle of transformative recruitment practice of reducing unjustifiable restrictive criteria to a minimum, thus enlarging candidate pools for truly competitive selection. This applies especially to the leadership posts in the organisation.
2. The SAMRC should collaborate with other science organisations and the private sector to improve postdoctoral job opportunities. Ideally, this should form the basis for a government-level strategy to create an environment in which research and innovation can flourish.
3. The Panel is of the opinion that the SAMRC should become more involved in the initiative to expand the country's clinical research capacity, inter alia by increasing the value and prestige of self-initiated grants and by targeting salaried registrars, preferably working in well-established teams, required by their specialist registering authority to complete a research project of about six months in duration. Existing clinical research centres should also be partnered and funded to extend the range of their activities, which should include training and networking.
4. The Panel must emphasise that 'clinical research' is not a homogenous field, and that the SAMRC may support national research goals by creating a regular and self-updating prioritisation of where the most needs are for 'research for health' as well as the greatest opportunities to contribute to the 'Knowledge Economy'. As an example, the present decline in research capacity in the pathology disciplines requires special attention from the SAMRC in order to avoid a situation of chronic neglect arising from the problematic model of the service-dominated NHLS.
5. To make substantial progress in clinical research in the next five years, and in terms of the convening role of the SAMRC within South Africa, the organisation should put together a specialist commission to give guidance and advice on strategies.
6. The SAMRC should be able to nominate at least one examiner for a Masters or PhD student when it awards a study grant. At the very least, the examiners' reports should be scrutinised by the Council. This will help address the quality of Masters and PhDs graduating.
7. The SAMRC should develop a ring-fenced fund aimed explicitly at developing centres of excellence at HDIs.
8. The SAMRC should consider appointing a vice-president with responsibilities specifically related to 'Strategic Goal 4', which would give shape to the stewardship role of the SAMRC for health research in South Africa. Negotiations with DHET should be started to provide core or co-funding for this.
9. The SAMRC should more fully utilise the wealth developed by partnering with other organisations in other countries. The SAMRC should work with their partners to come up with strategies to link these institutions with HDIs and other well-resourced institutions to develop consortiums. By adopting the RFI as a strategic tool, the SAMRC can increase the value it and the HDIs can derive from local and international research partnerships.



# CHAPTER 6

## BENCHMARKING AGAINST SIMILAR INSTITUTIONS

The Panel noted that a thorough ‘bench-marking’ exercise has been launched to compare the SAMRC to the principal health-research funding entities in the BRIC countries, in the UK and possibly other countries in Africa. This chapter in our Report has accordingly *not been designed along ‘benchmarking’ lines, but rather to see whether the current policies and practices of the SAMRC could be improved by adopting ideas that have worked for some other national health research funding bodies. These bodies were selected because they are based on the same type of institutional model used to set up and develop the SAMRC.*

## United Kingdom (UK)

The UK has three complementary but significantly overlapping organisations promoting and funding health-related research: the Medical Research Council (MRC-UK), which is one of a cluster of public funding bodies falling under the new umbrella body UK Research and Innovation (UKRI), and through it, to the government department of Business, Skills and Universities; the National Institute for Health Research (NIHR), which is part of the National Health Service (NHS) reporting to the national and regional departments of health; and the independent Academy of Medical Sciences.

### MRC-UK

The UK’s MRC started as the Medical Research Committee in 1913 with its primary role being the distribution of medical research funds under the terms of the 1911 National Insurance Act. In 1920, the Medical Research Committee became the Medical Research Council under a Royal Charter. Today, Britain’s Medical Research Council (MRC-UK) is dedicated to ‘improving human health through world-class medical research’. It has provided the financial support and scientific expertise behind a number of medical breakthroughs such as the development of penicillin, the structure of DNA, and the link between smoking and cancer. In the present day, the MRC-UK supports research across the biomedical and public health spectrum in all major areas of ill health. The MRC-UK supports research in universities and hospitals, and in its own units and institutes in the UK and in Africa. It works closely with the IHR, and more broadly with the NHS and the UK health departments to deliver on its mission, and gives a high priority to research that is likely to make a real difference to clinical practice and the health of the population.

While the MRC-UK is one of many research councils in the UK that now fall under a single umbrella organisation, UK Research and Innovation (UKRI), the stated intention is not to interfere with the developed culture and

practice model of individual councils, but to produce better coordination and sharper strategic focus across the entire system.

The MRC-UK is governed by a council of about 14 members, which convenes every two months, and directs and oversees corporate policy and science strategy aimed at ensuring that the MRC-UK is effectively managed, and that it makes sound policy and spending decisions. It decides on all issues of major importance, including issues of corporate strategy, key strategic objectives and targets, and major decisions involving the use of financial and other resources. The Council is led by a chairperson, with the MRC-UK chief executive as deputy. Council members (12–13 members, half with extensive scientific achievement records) are drawn from industry, academia, government and the NHS. Scientist members of the Council also chair specialist research boards on a number of priority areas of research (currently infections and immunity, molecular and cellular medicine, neurosciences and mental health, population and systems medicine, global health, and translational research), which are the primary project-funding agents in each of these domains, drawing on set budgets. A Training and Development Board similarly distributes funding for training medical scientists. Each Board is made up of senior scientists from all over the UK and the chair is a member of the separate Strategy Board, which is responsible to the Council for developing, coordinating, overseeing implementation of and evaluating the MRC-UK’s strategic plans. The Strategy Board takes a leading role in periodically developing an overall strategic scientific plan for the MRC-UK, taking into account research strategies of the MRC-UK and elsewhere, ensuring that the organisation is responsive to the current and future scientific landscape.

When stand-alone grant support is insufficient, the three main support mechanisms are the following:

- Institutes: Very long-term flexible multidisciplinary investments
- Units: More focused investments established for as long as needed to support a scientific need and/or deliver a research vision
- Centres: Build on existing MRC-UK and other support to add value and help establish a centre of excellence

The MRC-UK has about 50 units and centres, and five institutes in the UK, as well as two units in Gambia and Uganda.

In this richly over-layered system, the MRC-UK has further established overview groups to ensure that the research boards and other funding committees develop

coordinated initiatives and activities. The groups report to the Strategy Board, with the chair of each Board serving as a member of that Board. Their job is to review the MRC-UK's portfolio across the relevant research areas, identifying potential gaps and opportunities, consulting with the wider research community and relevant stakeholders, and commissioning studies as needed. They monitor the progress and impact of research funding, special calls and initiatives, and investment across the spectrum of MRC-UK support. They have a key role in ensuring translational and public health priorities are addressed. The groups contribute to strategic cross-funder work with the National Institute for Health Research (see below) and with health departments, and help the MRC-UK's Strategy Board develop future scientific strategy.

The MRC-UK College of Experts (appointed peer reviewers), responsible for ensuring that the research funded is of an internationally competitive quality, is made up of more than 1 000 expert scientists who have agreed to review a minimum of six research proposals per year. The College also provides a pool of expertise for MRC-UK reviews of specific research topics or five-yearly reviews of MRC-UK units, or evaluation of the impact of MRC-UK-funded research.

The MRC-UK Ethics, Regulation and Public Involvement Committee provides the MRC-UK with expert ethical advice on a wide range of issues relating to medical research. The Committee's formal terms of reference are to advise the MRC-UK on ethical issues of concern relating to research proposals involving human subjects, personal information and human biological materials in response to requests for advice from the Research Management Group or Corporate Affairs Group at MRC-UK head office or the MRC-UK research boards.

The day-to-day management of the MRC-UK is overseen by a Management Board at the MRC-UK head office. It is an operational decision-making body and discussion forum chaired by the chief executive. The terms of reference for this Board are to manage operations where policy and decisions have major importance for the delivery of the MRC-UK's objectives and/or for key stakeholder relationships

The MRC-UK has a service centre, shared with other research councils, that provides procurement, finance and human resources services to the MRC-UK head office and research units, and institutes across the UK. The shared service centre has nearly 100 members of staff carrying out transactional work on behalf of MRC-UK units and institutes. This allows administrative staff in units to concentrate on providing support for strategic and management issues. The aim of the shared service

centre is to achieve efficiencies that release as much of the MRC-UK's financial resources as possible for medical research.

The MRC-UK owns the intellectual property rights on discoveries made by the scientists employed at its units and institutes. It commercialises these findings by licensing them to industry through MRC-UK Technology, an affiliated technology transfer company. This has two major benefits: first, scientists' findings are translated into new treatments and technologies as swiftly as possible, and second, the licensing income can be ploughed back into further medical research.

The Medical Research Foundation is the MRC-UK's independently managed charity. It receives funds from the giving public to support medical research, training, public engagement and dissemination of knowledge. Since it was first established in 1920, the MRC-UK has been able to accept charitable bequests, endowments and donations from the public to contribute towards the costs of the research that it undertakes.

The latest 2014–2019 MRC-UK Strategic Plan continues the theme of '*research changes lives*', thus re-emphasising the impact that world-class research has on improving the health and wellbeing of society.

Its aims are as follows:

- **Strategic aim 1:** Picking research that delivers: The MRC-UK will speed up the exploitation of the best ideas in medical science, from fundamental discovery science to innovative preventative and therapeutic interventions in humans.
  - o **Theme 1:** Resilience, repair and replacement, involving natural protection, tissue disease and degeneration, mental health and wellbeing, and repair and replacement
  - o **Theme 2:** Living a long and healthy life, involving molecular datasets and disease, life course perspective, lifestyles affecting health, and environment and health
- **Strategic aim 2:** Research to people: The MRC-UK will work with researchers in public and private sectors, regulators, and the breadth of stakeholder communities to ensure that research of the highest quality is translated into tangible benefits for society as a whole. This will involve securing impact from medical research regulation, ethics, governance and working with decision-makers, and public engagement.
- **Strategic aim 3:** Going global: The MRC-UK will use its experience, expertise and resources to encourage partnership working in the international community to tackle important and challenging

research goals.

- o **Theme 1:** International partnerships and shaping the agenda, to provide international leadership in partnerships that enhance the competitiveness of the UK knowledge and health base, and to influence the international research agenda
- o **Theme 2:** Global health, involving support of global health research that addresses the inequalities in health that arise, particularly in developing countries
- **Strategic aim 4:** Supporting scientists: The MRC-UK aims to strengthen the UK research base to enable the scientific community to respond effectively to current and future grand challenges in medical research.
  - o **Theme 1:** Capacity and skills, involving training and developing the next generation of biomedical research leaders by supporting outstanding individuals at crucial points in their research careers, aligned to national strategic skills objectives
  - o **Theme 2:** Research environment, involving the provision of a world-class research environment for medical research

The MRC-UK has an enviable record, as shown in terms of a few selected output indicators:

- Over 6 000 grants were made in 2014–15. Ninety per cent of these grants led to international publications with average citation rates twice the world average. Half of all grantees raised significant additional funding; half of all grantees worked in collaborations and half of all supported postgraduate students went on to postdoctoral fellowships.
- Researchers reported that their work had led to the development of more than 1 200 medical products or interventions, 35 software or technical products, and 112 artistic and creative products.
- MRC-UK-supported research led to the creation or growth of more than 100 companies.

### **The National Institute for Health Research (NIHR)**

The NIHR was established in 2006 to transform research in the National Health Service (NHS). It claims to be a ‘virtual’ organisation, which means that although what it does and the research it funds are very real, it is not a corporation or a legal entity, or a ‘bricks and mortar’ enterprise in the traditional sense. Rather, it is an overarching entity that collectively represents all publicly funded research in the NHS: ‘the research arm of the NHS’.

The purposes of the NIHR are to transform research in the NHS, to increase the volume of applied health research for the benefit of patients and the public, to drive faster translation of basic science discoveries into tangible benefits, to develop and support the people who conduct and contribute to applied health research, and to attract investment by the life sciences industry through its world-class facilities for health research.

Since comprehensive records began in 2009, the total number of patients taking part in, and benefiting from, clinical trials has increased five-fold, rising from under one million to more than five million. The UK Clinical Trials Gateway was created to make information about ongoing studies available to patients and the public. The NIHR was the first research organisation in the world to establish a national advisory group, INVOLVE, to make sure the views of patients and the public are an essential part of the processes through which research is identified, prioritised, commissioned, designed, conducted and disseminated. As well as investing in research to help the NHS and care providers meet the major health and social challenges they face, such as long-term conditions, inequalities, poverty and ageing, the NIHR has responded to national research priorities, for example, dementia and antimicrobial resistance. By 2015, nearly £3.5 billion of additional research investment from government, charities and the life sciences industry has been attracted through the NIHR’s centres and facilities for experimental medicine in the NHS, with a year-on-year increase in funding from industry and charities of at least 40%. Over 100 national and international patents have been granted and nearly 200 licensing deals concluded.

The main areas of funding are treatment efficacy and mechanisms evaluation, health services and delivery research, health technology assessment, invention for innovation, public health research, research for patient benefit, and systematic reviews. This takes the form, inter alia, of research programmes with design and methodological support available to applicants through the NIHR’s research design service; research schools in primary care, public health and social care research; research units in a variety of applied areas; and surgical reconstruction and microbiology research centres.

Translating discoveries into treatment breakthroughs, practical products, treatments, devices, procedures, and interventions for clinicians and other users of research evidence is assisted by clinical research infrastructure from early phase biomedical research centres, through diagnostic evidence and health-care technology cooperatives, to the later-phase Collaborations for Leadership in Applied Health Research and Care (CLAHRCs), as well as by appraising research outputs in



the dissemination centre, systematic reviews programme and emerging health technologies in the broader Horizon Scanning and Research Intelligence Centre.

Training researchers and leaders involves training programmes, a leadership programme, research professorships, senior investigators and infrastructure trainees.

Stimulating national economic growth means working with the life sciences industry to help patients gain earlier access to breakthrough treatments and encourage broader investment in, and economic growth from, health research. The NIHR provides advice on research collaboration through the NIHR Office for Clinical Research Infrastructure (NOCRI), and supports research in the NHS through its infrastructure, including the Clinical Research Network and Study Support Service.

The NIHR tries to help all external research funders, such as the life sciences industry, charities and public funders, to benefit patients, the public and the health and care system, through the Clinical Practice Research Datalink (CPRD); the Clinical Research Network (CRN); and research information and resources including the Clinical Practice Research Datalink (CPRD), the Clinical Record Interactive Search (CRIS) and Dementia Clinical Record Interactive Search (D-CRIS) systems, the Health Informatics Collaborative, BioResource, the MRC-NIHR Phenome Centre, and the National BioSample Centre.

### **The Academy of Medical Sciences, UK**

The UK's Academy of Medical Sciences (AMedSci) was established in 1998. Its objectives are to improve health through research and promote benefits for society from medical science, attempting to influence policy, link state and commercial health and research organisations, and encourage dialogue about the medical sciences. Its purpose was to support biomedical scientists and clinical academics working together to promote advances in medical science as a national resource outside the framework of government, with the expertise and authority to deal with scientific and societal aspects of public policy issues in health care. It is one of the four learned academies in the UK, with the Royal Society, Royal Academy of Engineering and the British Academy. It occupies a dedicated headquarters building, which provides office space for its 25 members of staff, and has rooms for events and conferences. The Academy is governed by a council of 24 fellows including six senior honorary officers, whose role is to provide strategic advice to the Academy.

As of May 2015, the Academy had 1 169 fellows drawn from fundamental biological sciences, clinical academic medicine, public and population health, health technology implementation, veterinary science, dentistry, medical

and nursing care, and other professions allied to medical science, as well as mathematics, chemistry, physics, engineering, ethics, social science and the law because these are relevant to medicine. Fellowship indicates that the Academy has judged an individual to have made 'outstanding contributions ... to the progress of medical science and the development of better healthcare'.

Areas of policy work performed by the AMS originate from within the Academy Council and wider fellowships, and in response to consultations from the government, parliament and other relevant bodies. The Academy's National Mentoring and Outreach Scheme was established in 2009 and provides one-to-one mentoring by Academy fellows for clinical lecturers and clinician scientist fellows. It also offers activities for academic clinical fellows, clinical training fellows and MB PhD students.

The Academy's funding schemes focus on areas of specific and specialist need, addressing perceived shortages within key specialty areas, and international collaboration. Schemes include Clinician Scientist Fellowships, Starter Grants for Clinical Lecturers and UK/Middle East Exchange Fellowships.

The Academy's public events demonstrate recent research and provide a platform for discussion of the latest science. The Academy also has a forum that brings together biomedical scientists from academia and industry. The Academy is active in the production of independent consensus reports on health research topics and related public policy. (A recently published forum report was issued jointly with the Academy of Science of South Africa on multi-morbidity trends and implications for health care.) These feed into the strategic thinking of the MRC-UK, the NIHR and the health departments.

### **Comment on the UK system**

The UK stands in second or third place worldwide in terms of the strength of its science and innovation system. Its health research support system is extraordinarily complex, diverse, and well-resourced and administered. (This becomes even more so if one takes into account the ample additional resources available to UK investigators from the EU, Wellcome Trust and the Royal Society.) The three public organisations described briefly above have markedly overlapping strategies and priorities despite their apparently distinct high-level mandates – this provides researchers with a wealth of options to seek and obtain funding for their work. The organisations are all forward-looking (extensive foresight activity) as well as results-orientated in the present (translation). The national depth of talent (extensively enriched by immigration) is so extensive that close-to-ideal peer

review of proposals and outcomes, as well as due administrative process, can be achieved across the vast overall organisational landscape and activity spectrum.

What is particularly striking about the UK public health research system is the rapid change it has undergone in the last 10–20 years, with the addition of two new organisations (the NIHR and the AMS) and the placement of the MRC-UK under a new umbrella coordinating body comprising all the major statutory science funding organisations in the UK: UKRI.

## India

### *Indian Council for Medical Research (ICMR)*

The Indian Council for Medical Research (ICMR), New Delhi, the apex body in India for the formulation, coordination and promotion of biomedical research, is one of the oldest medical research bodies in the world.

In 1911, the Indian government established the Indian Research Fund Association (IRFA) with the specific objective of sponsoring and coordinating medical research in the country. After independence, the IRFA was re-designated the Indian Council for Medical Research (ICMR) in 1949. The new ICMR was established with a considerably expanded scope of functions. The Council is funded by the Indian government through the Ministry of Health and Family Welfare, and its research priorities coincide with national health priorities such as the control and management of communicable diseases; fertility control; maternal and child health; control of nutritional disorders; developing alternative strategies for health-care delivery; containment within safety limits of environmental and occupational health problems; research on major non-communicable diseases such as cancer, cardiovascular diseases, blindness, diabetes, and other metabolic and haematological disorders; mental health research; and drug research (including traditional remedies). These efforts are undertaken with a view to reduce the total burden of disease, and to promote health and well-being of the population.

The Governing Body of the Council is presided over by the Union Health Minister and comprises eminent scientists, public health experts, as well as elected members of the Parliament. It is assisted in scientific and technical matters by a Scientific Advisory Board (SAB), comprising eminent experts in different biomedical disciplines. The Board is the highest technical body that reviews the work of the ICMR (in its totality) and advises the ICMR on both short-term and long-term research policies, strategies, thrust areas of research, and so on. The Board, in turn, is

assisted by a series of scientific advisory groups, scientific advisory committees, expert groups, task forces and steering committees that evaluate and monitor different research activities of the Council.

The Council promotes biomedical research in the country through intramural as well as extramural research. Over the decades, the base of extramural research, and also its strategies, have been expanded by the Council. However, the resource demands of the intramural programme continue to dwarf extramural commitments and there are continuing serious challenges associated with unproductive intramural units.

Each of the ICMR institutes/centres has a Scientific Advisory Committee (SAC), which is composed of experts (subject specialists) in the specific areas of research undertaken by the institute/centre concerned. The full SAC meets at least once a year while the members interact with the relevant institute throughout the year. Each of the five technical divisions at the ICMR (epidemiology and communicable diseases, non-communicable diseases, reproductive health and nutrition, basic medical sciences and publications, and information) also has a Scientific Advisory Group (SAG), which meets annually and is composed of experts in the respective fields. The SAGs essentially review the extramural activities of the concerned divisions, and deliberate on the linkages between intramural and extramural research activities.

The reports of the SACs of the institutes and SAGs of the technical divisions of ICMR headquarters are placed before the SAB for its consideration, while the report and recommendations of the SAB are placed before the Governing Body. The Indian government constituted ICMR review committees that looked into the working of the entire organisation from the scientific, administrative and financial angles, including the working conditions of staff, in the late 1960s and early 1980 (last report in 1984).

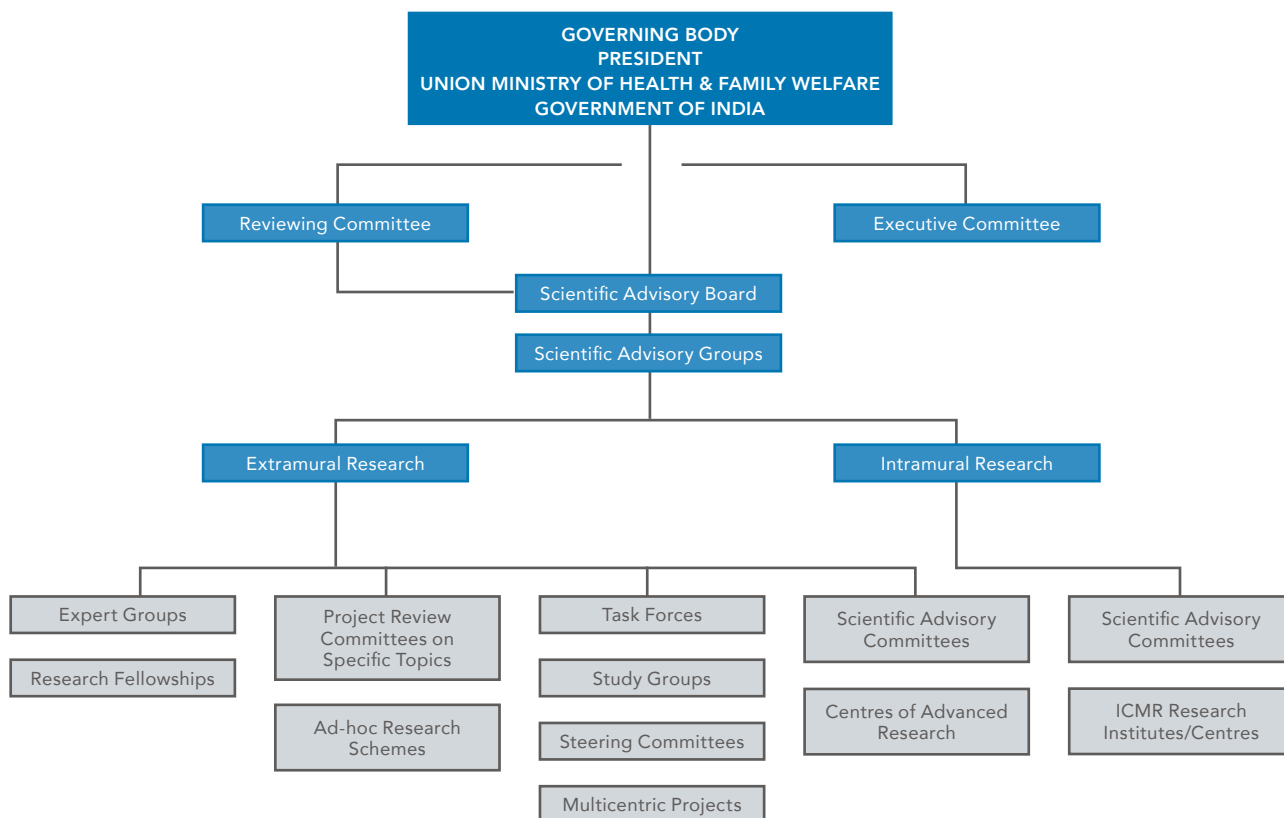
Intramural research is carried out currently through the Council's 33 research institutes/centres/units. These include:

- twenty-three mission-oriented national institutes located in different parts of India that address research on specific areas such as tuberculosis, leprosy, cholera and diarrhoeal diseases, viral diseases including AIDS, malaria, kala-azar, vector control, nutrition, reproduction, immunohaematology, oncology, and medical statistics
- five regional medical research centres that focus on regional health problems, and also aim to strengthen or generate research capabilities in

- different geographic areas of the country
- five unit/centres dealing with food and drug toxicology, viral diseases, handling microorganisms

of highly infectious nature, prenatal diagnosis for neonatal retardation, and supply of various animal models and feeds for experimental purposes.

Figure 1: Indian Council for Medical Research governance structure



Extramural research is promoted by ICMR through centres for advanced research in different research areas around existing expertise and infrastructure in selected departments of medical colleges, universities and other non-ICMR research institutes. The ICMR also funds task force studies, which emphasise a time-bound, goal-oriented approach with clearly defined targets, specific time frames, standardised and uniform methodologies, and often a multi-centric structure. Open-ended (self-initiated) research is conducted based on applications for grants-in-aid received from scientists in non-ICMR research institutes, medical colleges and universities located in different parts of the country. The ICMR institutes include:

- National JALMA Institute for Leprosy and Other Mycobacterial Diseases (NCJILOMD), Agra
- National Institute of Occupational Health (NIOH), Ahmedabad
- Tuberculosis Research Centre (TRC), Chennai
- National Institute of Epidemiology (NIE), Chennai
- National Institute of Malaria Research (NIMR), Delhi
- Institute of Pathology (IOP), Delhi
- National Institute of Medical Statistics (NIMS),

Delhi

- National Institute of Nutrition (NIN), Hyderabad
- National Centre for Laboratory Animal Science (NCLAS), Hyderabad
- Food and Drug Toxicology Research Centre (FDTRC), Hyderabad
- National Institute of Cholera and Enteric Diseases (NICED), Kolkata
- Centre for Research in Medical Entomology (CRME), Madurai
- National Institute for Research in Reproductive Health (NIRRH), Mumbai
- National Institute of Immunohaematology (NIIH), Mumbai
- Enterovirus Research Centre (ERC), Mumbai
- Genetic Research Centre (GRC), Mumbai
- Institute of Cytology and Preventive Oncology (ICPO), Noida
- Rajendra Memorial Research Institute of Medical Sciences (RMRIMS), Patna
- Vector Control Research Centre (VCRC), Ponducherry

- Microbial Containment Complex (MCC), Pune
- National Institute of Virology (NIV), Pune
- National AIDS Research Institute (NARI), Pune.

In the context of the changing demands in public health, the balancing of research efforts between different competing fields, especially when resources are severely limited, is a serious problem encountered in the management of medical research, particularly in developing countries such as India. Infectious diseases and excessive population growth have continued to constitute the major priorities to be addressed in medical research, but recently work has intensified on emerging health problems such as cardiovascular diseases, metabolic disorders (including diabetes mellitus), mental health problems, neurological disorders, blindness, liver disease, hearing impairment, cancer, drug abuse, accidents and disabilities. Research on active principles in traditional medicines/herbal remedies has been revived with a disease-oriented approach. Attempts have been made to strengthen and streamline medical informatics and communication to meet the growing demands and needs of the biomedical community.

In addition to research activities, the ICMR encourages human resource development in biomedical research through the awarding of research fellowships, short-term visiting fellowships and short-term research studentships, as well as various training programmes and workshops conducted by ICMR institutes and its headquarters. For retired medical scientists and teachers, the Council offers the position of emeritus scientist to enable them to continue or take up research on specific biomedical topics. The Council also awards prizes to Indian scientists in recognition of significant contributions to biomedical research. At present, the Council offers 38 such awards, of which 11 are meant exclusively for young scientists (below 40 years).

The annual expenditure of the ICMR currently appears to be about 100 million USD or about R1.35 billion. The Department of Health Research (DHR), of which the ICMR is the prime component, spends about 10% of this amount on its more care-focused programmes. There has been much recent criticism in both parliament and the media of the low productivity of the ICMR as a whole, with only about 800 recognised journal publications per annum from all ICMR-affiliated researchers, very few patents approved or commercialised, and a perceived inability of the Council to point to any real benefit in public health or disease treatment that has arisen from its work (*The Economic Times: 'Parliamentary panel pulls up ICMR for poor research outputs', 4 April 2017; R Barnwal in ET HealthWorld: 'The sorry state of medical research in India', 18 April 2017*). In part, in response

to the poor performance record at ICMR, particularly in innovation-focused research, the Department of Biotechnology was established several decades ago and has supplanted ICMR as the main supporter of basic biomedical research designed to generate new medical countermeasures. Until recently, the ICMR continued to use most of the Indian government's funding for clinical research, but even that is beginning to change because such a large proportion of ICMR resources are utilised to fund its historic obligations to a large number of institutes with their heavy burdens of aging facilities and protected personnel.

#### Comment on the Indian system

India has the second largest population in the world (approximately 1.1 billion) and is the seventh-largest economy. In 1997, the author of an article in an Indian journal calculated that the US NIH spent more in one hour than the ICMR did in one year! (Saxena, R K 'Biomedical research funding in India', in *The National Medical Journal of India*, 1997, 10:105-106) The SAMRC receives about R600 million per annum in baseline (government), about half of the ICMR's allocation, but the population is about 55 million and the size of South Africa's economy is far down the list. Without going into a detailed comparison of the two countries, one can conclude that the ICMR is severely underfunded in respect of its mandate. Against this, the absence of a system of rigorous, periodic external review of the entire organisation suggests that all is not well with the ICMR itself. The absorption of so much of the available funding to keep decaying institutes going is a warning against putting too many eggs in this basket in a research funding system, restricting the number of such entities and providing mechanisms for their closure when necessary in terms of their performance and/or priority.

## The Republic of the Philippines (the Philippines)

The Review Panel elected to describe the health research system of the Philippines because this country, of about 96.5 million people in South East Asia, has succeeded in setting up a unitary system of science and technology, in which 'research for health' is embedded without fragmentation, and without significant donor involvement or support. The country comprises over 700 islands, but the majority of the population lives on only 11 of them. The official languages are Filipino and English, literacy approaches 100%, the major religion is Christianity, and life expectancy is 66 years for men and 73 years for women.

The health delivery system resembles that in South Africa to some extent. There are an increasing number of private health providers and, as of 2009, 67.1% of health care came from private expenditures while 32.9% was from government. In 2013, total expenditures on the health sector was 3.8% of GDP, which is below the WHO target of 5%. Health expenditure represented about 6.1% of total government spending. Per capita total expenditure at the average exchange rate was USD52. The budget allocation for health care in 2010 was ₱28 billion (about USD597 million or R8 billion) or ₱310 (USD7) per person, but this budget allocation increased in 2014 with a record high in the collection of taxes from the 'House Bill 5727' (commonly called the 'Sin Tax Bill').

There are an estimated 90 000 physicians or just over 1 per every 1 000 people, 481 000 nurses (5 for every 1 000), 43 dentists (1 for every 200 000 people), and 1 hospital bed per every 770 people. Retention of skilled practitioners is a problem, for example, 70% of nursing graduates go overseas to work (the Philippines is the world's biggest supplier of nurses 'for export').

In 2001, there were approximately 1 700 hospitals, of which about 40% were government run and 60% private. Cardiovascular diseases account for more than 25% of all deaths. According to official estimates, 1 965 cases of HIV were reported in 2003, of which, 636 had developed AIDS. Despite the increase in HIV/AIDS cases from 12 000 in 2005 to 17 450 as of April 2014, with 5 965 people on antiretroviral therapy, the country is still a low

HIV-prevalence country with less than 0.1% of the adult population estimated to be HIV-positive. This contrasts markedly with the situation in South Africa.

**The Philippine Council for Health Research and Development, Department of Science and Technology, Republic of the Philippines**

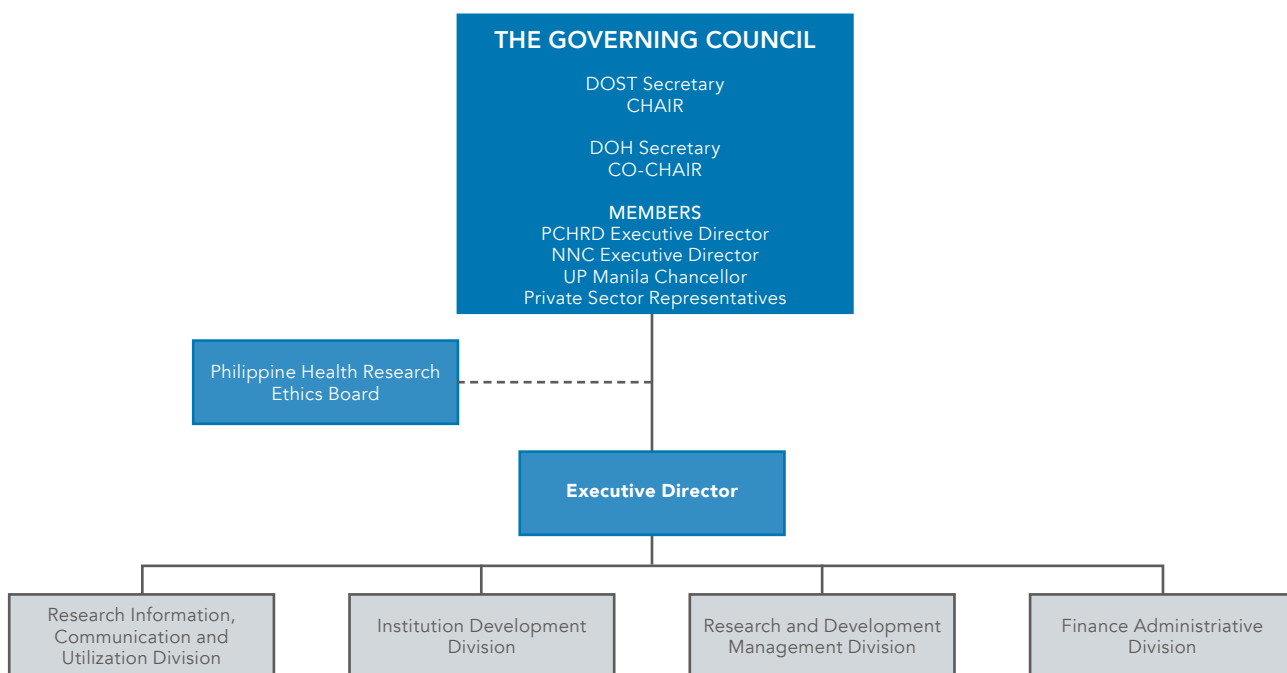
The Philippine Council for Health Research and Development (PCHRD) is one of the three sectoral councils of the Department of Science and Technology (DOST). It is a forward-looking, partnership-based national body, responsible for coordinating and monitoring research activities in the country.

PCHRD was created in 1982 through Executive Order No. 784. In 1987, Executive Order No. 128 reaffirmed its existence and relevance, and reorganised the National Science and Technology Authority into what is now the Department of Science and Technology.

The organogram of this key public body (see Figure 2 page 69) comprises a 'Governing Council', an Executive Director and four divisions, making up a collective for funding 'research for health', building capacity at both individual and institutional levels, and maximising 'research information, communication and utilisation'.

As the primary source of health research leadership and direction in the country, PCHRD aims to foster healthier and more productive lives among the Filipinos through health research and development (R&D).

Figure 2: PCHRD organisational structure



The PCHRD is mandated to perform the following functions:

- Formulate policies, plans, programmes, projects and strategies for science and technology development in health
- Programme and allocate government and external funds for R&D in health
- Monitor R&D projects that are ‘research for health’
- Generate external funds for health research

As the focal point for health in the country, the PCHRD:

- provides leadership and direction in health and related R&D activities
- rationalises investment in science and technology through a system of review of ongoing and pipeline projects in the government sector, and by influencing the private sector to support and implement projects that meet national needs (see below)
- develops and strengthens human and infrastructure resources of the health research network

- implements a research utilisation programme to ensure that research products are properly disseminated among, and utilised by, their intended users
- facilitates the identification and packaging of health technologies for adoption and commercialisation by both government and private sectors
- generates additional resources for health R&D by pursuing active collaboration with local and international funding agencies.

The PCHRD funds research proposals that are aligned with the ‘National Unified Health Research Agenda (NUHRA)’, which is a national template for health research and development efforts, and guides the research sector on the research that addresses the most pressing health concerns of the country. NUHRA specifies the areas and topics that need to be addressed in the next five years, in line with global and national initiatives influencing the health sector.

**Table 2: NUHRA research priorities 2011–2016**

Research priority	Research area
Health technology development	<ul style="list-style-type: none"> <li>• Diagnostics</li> <li>• Genomics/molecular technology</li> <li>• Drug discovery/development</li> <li>• Functional foods</li> <li>• Hospital equipment and biomedical devices</li> <li>• Information and communication technology (ICT) for health</li> </ul>
Health financing	<ul style="list-style-type: none"> <li>• Financial risk protection</li> </ul>
Health service delivery	<ul style="list-style-type: none"> <li>• Improving access to quality hospitals and health-care facilities</li> <li>• Improving provision of public health services</li> </ul>
Socio-environmental health concerns	<ul style="list-style-type: none"> <li>• Environmental and climate change</li> <li>• Social science and health</li> </ul>

Approval of proposals for research grants are based on a multi-level review process:

- In-house screening in terms of alignment to the research priorities, absence of duplication and completeness of requirements
- Technical review by external consultants based on the criteria of technical merit, data management, relevance/significance of marketability potential (for product-based proposals), feasibility (practicality, cost and time) and proponent’s/institution’s capacity
- Final approval by the PCHRD Governing Council or the PCHRD executive director, depending on the

recommended total budgetary requirement of the proposal

In each stage of the review process, the proponent may need to revise the proposal based on the recommendations of the reviewers. The review process takes 75 working days if all the requirements have been submitted.

The PCHRD offers a variety of information services to its community. The HERDIN NeoN database provides quick and easy access to more than 50 000 citations and bibliographic information from published

(Philippine health research journals, conference/convention proceedings, and international databases and publications) and unpublished material (research institutions' research projects and reports, theses, and dissertations), and health researchers in the country.

The 'Philippine Traditional Knowledge Digital Library on Health' is the national electronic repository of traditional knowledge and practices on health of the indigenous and cultural communities of the country. TKDL provides access to more than 16 000 plant-derived products and 191 natural products, 214 records of traditional healers and healing practices, and ethnopharmacology researches in the Philippines. The PCHRD Library offers an online document delivery service through HERDIN.

The 'Philippine Health Research Registry' (PHRR) is a tool for good governance to promote transparency and accountability in health research. PHRR is a publicly accessible database available on newly approved health research projects or programmes. It includes clinical trials and non-clinical studies conducted in the Philippines. The registry is compliant with the WHO standard for clinical trials registry. The PHRR aims to track all on-going and newly approved research activities to know who funds what type of project, to compel researchers to submit final reports for research they have conducted, to avoid duplication of research, and to ensure equal access opportunity for prospective clinical trial participants. Data entries are prospective, and are input and updated by the researchers themselves.

The Research Information, Communication and Utilisation Division of PCHRD supports projects and activities on research dissemination, including, but not limited to support for publication, paper presentation and events. The Council provides support in the form of publication fees for researchers interested in publishing their study. PCHRD also assists researchers who would like to print their studies, monographs or books that are in line with the NUHRA.

As the DOST agency is responsible for coordinating and monitoring health researchers in the country, the Division facilitates the identification and packaging of PCHRD-supported health technologies for adoption and commercialisation by both government and private sectors. It accelerates technology adoption by guiding researchers and investors through each step from idea generation to utilisation. The PCHRD helps both inventors and investors in the intellectual property (IP) commercialisation process. Based on the Technology Transfer Act of 2009, PCHRD's role as a funding agency changed from being a facilitator to a licensor. The technologies are owned by the implementing agencies

(RDIs) and their respective commercialisation processes (licensing and establishing spin-off companies) are negotiated by their own Technology Licensing Office. However, PCHRD can assist potential investors and the RDIs in the commercialisation process.

In terms of international linkages, the PCHRD is very much a partnership-based organisation. National, regional and international partnerships were strengthened during the so-called 'Forum 2015', which provided a good opportunity to forge alliances to leverage resources to tackle local and global health challenges.

The Council is the official host of the ASEAN Network for Drugs, Diagnostics, Vaccines, and Traditional Medicines Innovation (ASEAN-NDI), the regional network approved by the Association of Southeast Asian Nations as the first health R&D innovation network under its umbrella. Activities towards establishing a regional health innovation network in the ASEAN were initiated to enhance progress in product discovery and development in the region through intra-regional collaboration, and to contribute to the implementation of the 'Global Strategy and Plan of Action' (GSPA) on Public Health, Innovation and Intellectual Property approved through the World Health Resolution (WHA61.21).

The PCHRD now also has ties with the UK government through the Newton Fund Programme partnership, a research collaboration between and among Philippine and UK researchers. The UK MRC and the PCHRD have approved six research collaborations on surveillance, diagnostics, and characterisation of infectious diseases such as malaria, HIV, schistosomiasis, dengue, antimicrobial resistance and tuberculosis.

### ***The Philippine National Health Research System (PNHRS)***

Anchored on the objectives of promoting, facilitating and coordinating health research activities to develop a more coherent research agenda that connects to and converges with the wider health, economic, political, educational and S&T systems of the country, the DOST, through PCHRD, with the DOH, established the Philippine National Health Research System (PNHRS) by signing a memorandum of understanding in 2003. In 2007, the Commission on Higher Education (CHED) and the University of the Philippines Manila - National Institutes of Health (UPM-NIH) joined as core agencies of the PNHRS.

With the PNHRS in place, PCHRD's role of coordinating health research and development activities in the country has been reaffirmed. As a core agency of the PNHRS, the Council provides the essential technical, financial

and logistical support, in accordance with its mandate on research, to enable the PNHRs to contribute to the attainment of national and global health goals.

The PNHRs programmes are conceptualised and implemented along six areas:

1. Research agenda
2. Ethics
3. Capacity building
4. Research utilisation
5. Resource mobilisation
6. Structure, organisation, monitoring and evaluation

The PCHRD Secretariat, headed by an executive director, serves as the PNHRs Secretariat. The executive director is responsible for the smooth implementation of programmes and projects, and exercises an oversight function over the PNHRs.

The Secretariat provides technical and administrative support to the Technical Working Committees, Steering Committee and the Governing Council in the following areas:

- Research and development management
- Institution development
- Research information, communication and utilisation
- Finance and administration

The PNHRs framework is mirrored in all regions of the country, forming a network of regional research consortia. The consortium set-up varies depending on the culture and resources of the region. Each regional health research system addresses concerns relating to its health research agenda, development of human resources, conduct of research, and dissemination of research results, research utilisation, resource mobilisation, leadership and management.

#### Comment of the Philippine system

The Philippine Council for Health Research and Development appears to be successful in channelling large parts of the national Department of Health's budget for health research, as well as a significant part of the country's Department of Science and Technology budget for 'research for health'. It assists in performing periodic national priority reviews, which are aggregated into a single 'National Unified Health Research Agenda'. This is an effort by a national government, without intrusive donor interference, which has already existed for almost 20 years, is effective in what it does, is nationally accepted, and is very much embedded in the history of the nation in traditional health care and local research

efforts, while not eschewing the collective knowledge base of the globalised modern world.

## Lessons of possible use to the SAMRC

1. South Africa, in learning from others, must constantly seek ways of simplifying and reducing the human and material costs of possibly useful elements of 'research for health' systems in richer or much larger countries, building on the successful areas of what is already in place. Foreexample, in the domain of better coordination, it is likely that a division-of-labour agreement could be struck between the SAMRC and the Academy of Science of South Africa (ASSAf) to ensure non-duplication and maximum effectiveness of convening and evidence-for-policy review functions in the 'research-for-health' domain in South Africa. The scholarly strength, rigorous quality assurance, and arm's length independence of ASSAf's consensus review mechanism makes it the agent of choice for long-term interventions in policy and practice. The formal mandates of the NHRC (a part-time, volunteer statutory body with a small secretariat in the national Department of Health) are best carried out in a consultative and advisory manner involving out-sourcing of the investigation of complex issues to other organisations like ASSAf or the SAMRC. The SAMRC itself has the stewardship and performance mandate for health research that makes it appropriately capable of active intervention in the coordination of 'research for health' in the whole country, at the level of both policy and research-informed practice or translation.
2. The MRC-UK idea of a 'college of experts' constituting a formal panel of performance-proven peer reviewers may be a useful way for the SAMRC to deal simultaneously with quality assurance issues in peer review, as well as reviewer exhaustion and feedback into the system.
3. The SAMRC might want to borrow the idea of a dedicated charity to look at fundraising for research, directly targeting the public, or indirectly through the lottery and other possible sources in a country where philanthropy is in its infancy.
4. India has established a large number of 'national



research institutes' that are distributed across the country and fall under the country's SAMRC equivalent. The size and inertia of this system, and its substantial demands on the available funding despite low productivity, has a bearing on some of the proposals currently emanating from the realisation that the South African research/science council system is under-performing and not dynamic enough – an institute system must be small and selective, and be flexible in its design.

5. The introduction of skills retention schemes like the posts of 'emeritus scientist' in India is more complicated in South Africa with the need for transformation of the workforce, but may make sense even in this context in connection with purposeful capacity building within the 'rainbow nation' concept.
6. The successful model for deriving an agreed 'national unified health research agenda' of the Philippines could well be emulated by in a joint project between the SAMRC and the NHRC.



# CHAPTER 7

## THE SAMRC – THE NEXT FIVE YEARS

In earlier chapters, we described our findings and made our recommendations under each chapter heading.

The Panel believes that the SAMRC deserves praise for the revitalisation effort that has been effective in many ways and is currently still underway. The history of the organisation, and its recent focus on scientific excellence and transformation, has assured its continuation as one of South Africa's most valuable national assets and, seen as a whole, a recognised global leader in health research, defined by competence and integrity, and trusted as a partner by some of the most demanding co-funders and research organisations in the world. This resurgence of value is also due to the innovative nature of the modern SAMRC (clearly shown in the success of SHIP), and the scientific productivity of the extramural research units and some of the intramural research units that receive enabling funding from the Council. The prestige of the organisation is also enhanced by its leadership, and by the directors and senior staff of the productive intramural units, which play important national (and often international) roles in the biomedical and behavioural research enterprise.

We have also noted that there are still important areas in which the SAMRC must continue to address challenges and concerns. The successful degree of revitalisation that was, in part, prompted by the last (2010) SETI Review Report has resulted from much more effective leadership, rebalancing of the funding model in favour of the more cost-effective extramural unit and grant-funding model, and the realignment of the intramural programme to meet, in more direct ways than previously, important gaps or specially high-priority needs in the national health-care domain. However, the process is not complete, and in the face of a changing environment, it has to be reconceptualised and restructured in order to carry the Council into a future commensurate with its mandate and aspirations. We hope that our recommendations will help the NDOH, the SAMRC Board and the proposed cooperative system of internal governance under the president to achieve such an outcome.

We have been obliged to consider the current ferment in evolving national policy for the 'heart of the knowledge economy', and the science, technology and innovation domain. The universities have become the powerhouses of research productivity and human capital development, the research/science councils distinctly

less so. The spotlight has accordingly fallen on how these organisations, which include the SAMRC, can be made more effective and how they can be positioned better as essential complements to other players in the national system of innovation. This Review is made more timely by this fact, but also more difficult – we only hope that our in-depth look at one research/science council will help shape the debate and assist its conversion into policy and best practice.

The SAMRC is a sectoral council, reporting to, and funded by, the NDOH, which has decided to set up a new statutory body, NAPHISA, with a newly set mandate that overlaps that of the SAMRC. The Panel has taken note of the key studies already conducted on the possible future policy and disposition of the STI institutions, and has somewhat tentatively concluded that the threats to the SAMRC implicit in the establishment of NAPHISA may well be outweighed by the opportunities, not least of which is the imperative to re-think the intramural programme in a bold new way. Thus, this potentially problematic development (at least as perceived by the SAMRC Board and Executive) may be turned into an opportunity for clearer role definition, funding rationalisation, organisational reordering, and improved coordination and collaboration across the 'research for health' system. Of course, these positive outcomes are almost entirely dependent on the actions taken by parliament, the NDOH and the two statutory bodies concerned to find mutually beneficial ways to define responsibilities and devise complementary mandates within the new dispensation. If these actions are not effectively undertaken, the Panel cautions that internal disagreements, loss of research capacity and international reputation, bureaucratic intransigence, and declining financial commitments could lead to outcomes that fail to bring improvements to South Africa's health research system and diminish the benefits it now provides to the nation.

The Panel believes that the high-level principles for rejuvenation of the research/science council system developed within the current DST-led deliberations will be extremely useful to the SAMRC in strategic terms. To recapitulate, these are that their operations should be brought closer to the needs of communities; that they should evince a strong problem-solving orientation; that there should be continuous prioritisation and re-prioritisation of the innovation agenda; that continuous

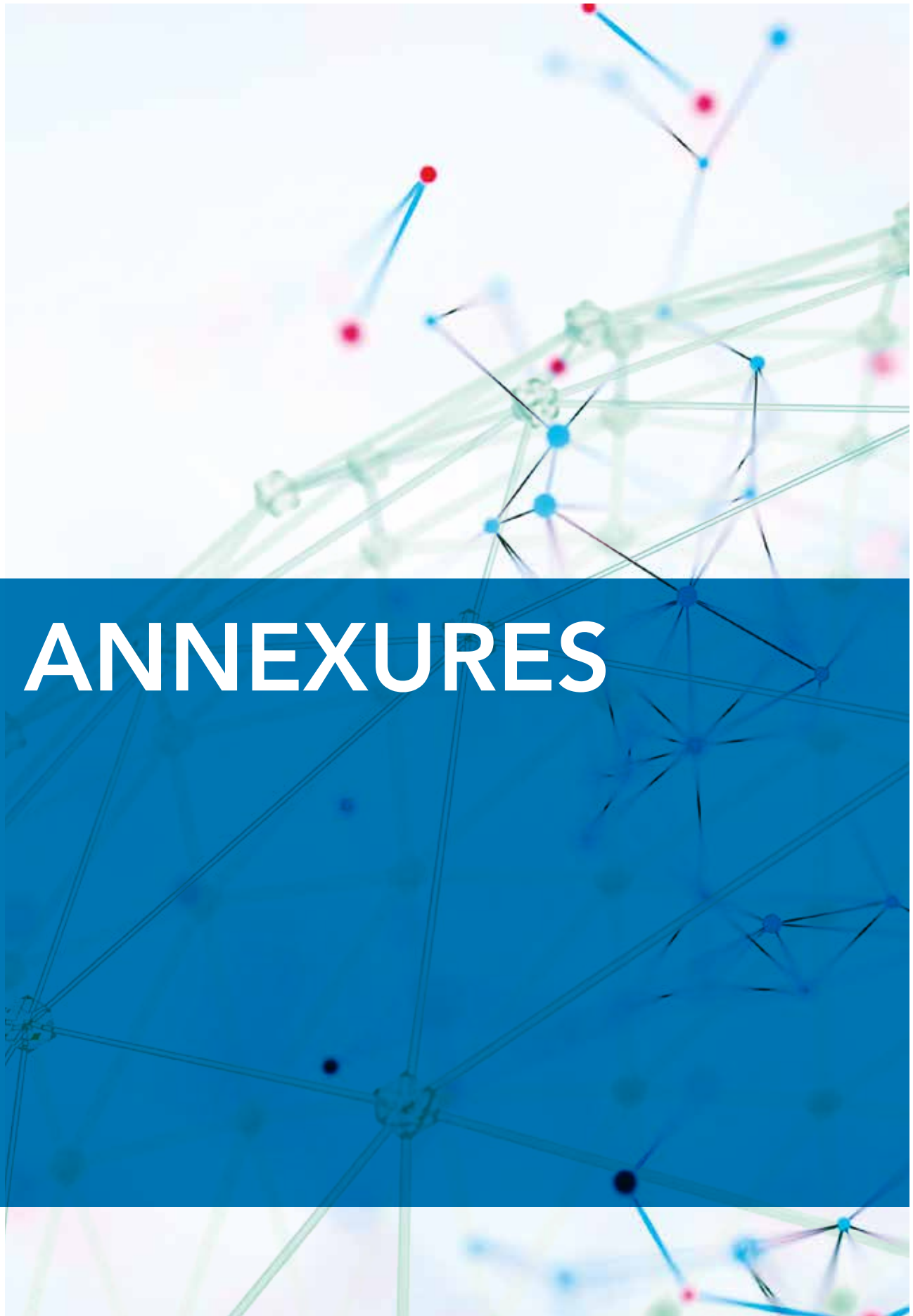
foresight should be exercised with respect to the basic and applied sciences; and the aspiration should be for global excellence and innovation competitiveness.

A common theme in this Report is the need for more effective and regular communication, both within the SAMRC and in the wider context of the extramural community. The same problem extends to the SAMRC's partner research/science councils, the NDOH and other relevant bodies. Excessive meetings and other communication strategies can become a burden and a waste of money, but the communication strategy currently in force seems to be very far from this extremity. Adding 'effective stakeholder communication' to the values of the organisation would be a good idea, and having a basic and well-prepared normative 'best practice guide' of when and how communication should be effected in typical situations would also be helpful.

Because they are contingent, particularly on funding and legislative changes, we have not been able to predict future scenarios within which the SAMRC will be called upon to shape its core role of steward and champion of 'research for health' in South Africa. We have addressed, to the degree possible and with the information provided to us, some of the environmental changes anticipated in the near future. The Panel also understands that many of the actions it recommends will require additional or at least radically re-ordered financial resources. Having such resources available will, of course, be dependent,

or at least in part, on the ability of South Africa to fully recover from an economic recession so that it can more rationally apply resources to endeavours, such as health research, that make major contributions to the well-being of all the country's people. Also related to this macro-economic issue lies the uncertain future stability of the higher education system upon which the SAMRC depends for effective and transformational graduate and postgraduate education and training of the country's talented youth. There is also an urgent need to address the health problems of the country in terms of the urgent remediation of the widespread socio-economic conditions associated with poverty and poor education, which are major causal or promotive risk factors for disease and ill health.

If there is one overwhelming recommendation for the future, then it is to define 'health' as both a national economic and social development goal, and to define 'research for health' as the national effort to ensure that the research needed to optimise the health of all South Africans and contribute optimally to South Africa's 'knowledge economy' can be undertaken. The SAMRC is the national institution best placed to provide such leadership and be the champion of 'research for health'. For it to exercise this role, it needs to be seen and structured as a multi-sectoral agency, with an appropriate mandate, and dedicated structure, governance and resources to act accordingly.



# ANNEXURES

## ANNEXURE A: FULL TERMS OF REFERENCE

### PURPOSE OF THE TERMS OF REFERENCE

1. The purpose of the Terms of Reference is to set out the objectives and aims of the South African Medical Research Council's (SAMRC's) 2016 Science Engineering and Technology Institution (SETIJ) Review Panel, the key questions that the review aims to answer, the appointment of the Panel Members, the methodology to be implemented, the review outputs, as well as the governance arrangements.

### BACKGROUND

2. The mandate of the SAMRC is legislated in terms of the Medical Research Act, 1991 (Act No. 58 of 1991) ("the SAMRC Act"). The objects of the SAMRC are, through research, development and technology transfer, to promote the improvement of the health and quality of life of the population of the Republic, and to perform such functions as maybe assigned to by or under the SAMRC Act.
3. The SAMRC is a Schedule 3A public entity as classified by the Public Finance Management Act, 1999 (Act No. 1 of 1999). It operates under the control of the Board, which is the Accounting Authority. The SAMRC falls within the jurisdiction of the Ministry of Health, which provides an oversight function as the Executive Authority.
4. In November 1997, the SAMRC was reviewed by an international panel as part of the national review of the country's science and technology system, commissioned by the then Department of Arts, Culture, Science and Technology, commonly known as the Science, Engineering and Technology Institution (SETI) Review.
5. The 1997 Review Panel reported that the SAMRC had undergone significant transformation in line with the national objectives of the new South Africa, as well as stressed the importance of the SAMRC remaining an autonomous body. The Panel recommended a substantial increase in the SAMRC's budget and placing more emphasis on priority - driven research.
6. A second SETI Review was conducted in 2001, with the 2010 SETI Review being the third external review of the SAMRC. The 2010 SETI Review was focused on the positioning of the SAMRC in the National System of Innovation, SAMRC governance, operational issues, outputs and outcomes of the SAMRC, and clinical research.
7. The review was conducted at a critical time of transformation at the SAMRC, such as the pending appointment of the new Board and the new President, when proposals to the MRC Act were being made, and a new Strategic Plan for the 2010 to 2015 was being developed.
8. The Final Report of the 2010 SETI Review revealed a number of challenges confronting the SAMRC at that time, such as that the reputation of the SAMRC having declined in recent years, and the SAMRC suffering the outside perception that its grants are pitifully small and not worth the considerable time and effort involved in applying for, and reporting on.
9. At the time of writing the 2010 SETI Review Report, the Panel found that the then Board was failing to fulfil its key functions adequately. For example, the agenda of the Board was often crowded with fiduciary matters that needed urgent or constant attention, thus seriously reducing the time that the Board had available to discuss the core business of the SAMRC of contributing to the country's health research.
10. The Panel also held the view that the SAMRC's positioning in the National System of Innovation is inappropriate at the National Department of Health ("the Department"), expressing concern that the Department expressed a limited interest in the SAMRC. Hence, the Panel questioned whether the Department is the most appropriate sole reporting body for the SAMRC, and recommended a change to bring the SAMRC within the mainstream of the National System of Innovation by making the SAMRC's line of reporting to the Department of Science & Technology (DST).
11. With regards to the operational shortcomings within the SAMRC, the key finding of the 2010 SETI Review was that the Executive Management of the SAMRC had not been rigorously applying the criteria for

establishing or renewing the SAMRC units and that the finance systems were not designed to enable research.

12. The findings of the 2010 SETI Review was the catalyst of the revitalization of the SAMRC, which saw the re - focusing of the organization to prioritise its research activities, ensuring that the organisation fulfils its mission to support all medical research in South Africa, as well as modernizing the way it aims to fulfil its mission. Following the 2010 SETI Review, there is now a need for the establishment of the fourth, 2016 SETI Review.

## SCOPE OF WORK

13. Below are the questions which the 2016 SAMRC SETI Review should respond to:

- a) Is the SAMRC functioning optimally and meeting its current mandate?
- b) Is the mandate of the SAMRC appropriate for South Africa?
- c) Is the SAMRC addressing the recommendations of the 2011 National Health Research Summit Report, and the targets set by the National Development Plan 2030?
- d) What is the contribution of the SAMRC as a subsidiary of the Department of Health in strengthening the SA health research system with regards to the following:
  - i. *Shortage of Human Resources for Health:* The Summit report has recommended that funding should be to double the number of health researchers and academic clinicians over the next 10 years. The National Development Plan, 2030 (NDP) target of production of PhDs by the South African government is to increase the percentage of PhD qualified staff in the higher education sector from the current 34 percent to over 75 percent by 2030, and to produce more than 100 doctoral graduates per million per year by 2030. What is the contribution of the SAMRC towards the achievement of these targets?
  - ii. *Lack of Health Research Facilities and Infrastructure:* What is the SAMRC contribution in the creation of Clinical Research Centres to facilitate research occurring alongside service and teaching in the Academic Health Complexes?

- iii. *Research Translation:* What is the role of MRC in translation of research to promote uptake and utilization of research results?
- e) How has the SAMRC aligned its roles with the national health research priorities as set out on the 2011 National Health Research Summit?
- f) What are the research initiatives/contributions of SAMRC in conducting: -
  - i. Research required achieving an increase in life expectancy?
  - ii. Research required to reduce maternal and child mortality?
  - iii. Research required to combat HIV/AIDS and TB?
- g) What is the role of SAMRC in assuring the best quality of research on the basis of best practice of science and ethics?
- h) What should the output indicators be? Can they include scientific publications, contribution to policy positions/briefs, capacity strengthening, production of patents and IP?
- i) How well does the SAMRC benchmark against similar institutions in upper- and middle income countries, and countries in the developing world?
- j) What is the interaction between the SAMRC and other science councils, such as the NRF, CSIR, HSRC and TIA?
- k) Is it competitive in world terms, given the changing nature of its funding streams and the broader developments within the National System of Innovation (including the cost of research and the demands of its funders)?
- l) What is its financial sustainability and the strength of its support services (such as finances, communications, human resources and support services)?
- m) What are the main strengths and main weaknesses of the SAMRC at present?
- n) What have the main achievements been since the last SETI Review regarding various indicators, including the pace and extent of its transformation, e.g. capturing, building, empowerment of women, black scientists, etc.?
- o) What progress has the SAMRC made in addressing the issues raised by the previous three Reviews?
- p) What links exist and how close are these between the SAMRC and government in provinces?
- q) What support does SAMRC provide to

- Research Ethics Committees overseeing health research, especially clinical trials?
- r) What support/collaboration do academic institutions have or receive from the SAMRC? What portion is received by “previously disadvantaged” institutions in relation to that received by “previously advantaged” institutions? Of what nature are the collaborations?

## PANEL MEMBERS

14. The panel members of the 2016 SETI Review will be appointed by the Minister of Health.
15. The Minister of Health is also to appoint international reviewers.
16. Prof Wieland Gevers is appointed the Chairperson of the 2016 SETI Review.
17. The members of the 2016 SETI Review will be paid the remuneration and allowances determined by the Board with regard to the approved Treasury rates for Committees.
18. The appointed Panel Members and international reviewers are listed in the document enclosed as Annexure A.

## DURATION OF THE REVIEW

19. The review will take place for a period as agreed between the Panel Members and the Minister of Health, deemed sufficient by both parties to satisfactorily complete the review.

## METHODOLOGY

20. The review will involve, but not limited to, the following:
  - a) Document review:
    - i. The SAMRC Act including applicable legislation, regulations, policies and government priorities;
    - ii. Review of SAMRC research units, programmes and initiatives;
    - iii. Review of Annual Reports (programmatic and financial) of the last five years (2010-2015);
    - iv. Review of documents on publication

- patterns; and
- v. Review of strategic documents currently being implemented.

- b) Conducting of interviews with the following:
  - i. The Department of Health (DoH) and Department of Science and Technology (DST) (oversight functions);
  - ii. The SAMRC Board;
  - iii. The SAMRC President;
  - iv. The SAMRC Executive Management Committee (EMC);
  - v. The managers of the SAMRC units, programs (including lead programs); and
  - vi. Peers such as the CSIR and HSRC.
- c) Site visits:
  - i. Laboratories;
  - ii. Clinical trial sites;
  - iii. Community based research projects; and
  - iv. SAMRC owned businesses.

## REVIEW OUTPUT

21. At the conclusion of the review, the Panel to be appointed by the Minister is to produce a final report of the Panel of the 2016 SETI Review.

## GOVERNANCE ARRANGEMENTS

22. The 2016 SETI Review Panel is accountable to the Minister of Health.
23. The 2016 SETI Review Panel and the Minister of Health shall convene regular meetings during the course of this review, as deemed necessary.
24. The 2016 SETI Review Panel shall submit to the Minister of Health the final report of the Panel of the 2016 SETI Review at the conclusion of this review.

## APPROVAL OF THE TERMS OF REFERENCE

25. These Terms of Reference will be approved by the Minister of Health by appending his signature.



## ANNEXURE B: FULL DOCUMENT LIST

- 2011 National Health Research Summit Report. Department of Health
- 2017 White Paper on Science and Technology in South Africa
- A national health research observatory. National Health Research Committee, 31 October 2016
- An integrated national strategic framework for health research in South Africa (2017–2030), Department of Health
- Composition of the SAMRC Board: 1 November 2016 to 31 October 2019
- Conclusion: Science councils balancing multiple mandates. Chapter 9, G Kruss et al, HSRC Press
- Draft terms of reference for MRC forum. 16 January 2017
- Draft White Paper on science and technology councils in South Africa, June 2017
- External Review actions schedule
- Final report of the panel for the 2010 SETI Review of the South African Medical Research Council
- Global burden of disease profile: South Africa, 2010
- Grants Innovation and Product Development overview
- Health innovation in South Africa: Finding local solutions overview
- Initial burden of disease estimates for South Africa, 2010. D Bradshaw et al, March 2003
- Minutes of the first Scientific Advisory Committee meeting, 10–11 August 2016
- MRC Act No. 58, 1991
- MRC Act 1991, Some revisions proposed to be reviewed and amended
- National Public Health Institute of South Africa Bill, presented to parliament, May 2017
- National Public Health Institute of South Africa: Department of Health briefing on NAPHISA. 21 June 2017
- No. 61 of 2003: National Health Act, 2004
- Promoting a science, technology and innovation policy for inclusive development in South Africa. Policy brief, G Kruss et al, HSRC, March 2017
- Proposed budget 2017–2019
- Public Finance Management Act No. 1 of 1999
- Rapid mortality surveillance report 2016. R Dorrington et al, Burden of Disease Research Unit, South African Medical Research Council
- Report 1: Strategic comment on the establishment of NAPHISA, 9 December 2015
- Report 3: Line-for-line comment on the NAPHISA Bill
- Report for the Scientific Advisory Committee requested on the meeting of 10–11 August 2016
- Research and innovation for socio-economic impact now: A review of the South African science, technology and innovation institutional landscape. Report by the Ministerial Review Panel, 30 April 2017
- Revised burden of disease estimates for the comparative risk factor assessment, South Africa 2000. R Norman et al, June 2006
- Revitalising the MRC: Current state of the organisation and a proposal for the way forward. Professor Salim Abdool Karim, 30 July 2012
- SAMRC administration service level agreements, November 2016 to January 2017
- SAMRC Annual Performance Plans 2012–2017
- SAMRC Annual Reports 2011–2016
- SAMRC Finance and Operations Directorate overview
- SAMRC financial data SETI Review 2017
- SAMRC Key controls review, 1 July to 30 September 2016
- SAMRC research highlights 2015: Report on intramural and extramural unit directors' meeting, October 2015
- SAMRC service level agreements: Finance
- SAMRC Strategic Plans 2018–2020
- Scientific Advisory Committee: Revised terms of reference
- Strategic Health Innovation Partnerships report to the Department of Science and Technology, March 2017
- Summary for the SETI Review: CAPRISA-MRC Report 2017
- Sustainable development goals: Action towards 2030
- Terms of reference of the South African Medical Research Council's 2016 Science, Engineering and Technology Institution Review
- The Science, Engineering and Technology Review recommendations of the Medical Research Council of South Africa, 2010
- The state of biosafety and biosecurity in South Africa. Academy of Science of South Africa, 2015
- The sustainable development goals report 2016. United Nations
- Unit Directors' Forum terms of reference
- Unit directors' meeting 2 March 2016 draft minutes
- Violence, Injury and Peace Research Unit focus and scope

## ANNEXURE C: SAMRC SETI REVIEW PROGRAMME

### SUNDAY 7 MAY 2017

Time	Activity	Location	Comments
8:00	Arrival	Cape Town	
14:00–18:00	Briefing by chairperson; consideration of general SETI review objectives; discussion of the ToR; discussion of work schedule and assignments; consideration of documentation; process issues; opening discussions	Protea Breakwater Lodge	

### MONDAY 8 MAY 2017

Time	Activity	Location	Comments
8:30–9:30	Document review and preparation: Defining work schedule and assigning activities	SAMRC Board room, Building A, Second Floor	
9:30–11:00	Interview with SAMRC president	SAMRC Board room, Building A, Second Floor	Glenda Gray
11:00–11:15	Tea		
11:15–12:15	Panel meets SAMRC Board chair (via video link)	SAMRC Board room, Building A, Second Floor	Mike Sathekge
12:15–13:00	Document review and preparation: Defining work schedule and assigning activities	SAMRC Board room, Building A, Second Floor	
13:00–14:00	Lunch		
14:00–17:00*	Document review and preparation: Finalisation and adoption of programme	SAMRC Board room, Building A, Second Floor	

\*15h15–15h30 Tea

## TUESDAY 9 MAY 2017

Time	Activity		Location	Comments	
8:30–9:30	Interview: Vice President		SAMRC EMC room, Building A, First Floor	Jeffrey Mphahlele	
9:30–10:30	Interview: SHIP, Flagship, Newton, Grand Challenges		SAMRC EMC room, Building A, First Floor	Richard Gordon; Niresh Bhagwandin; Michelle Mulder	
10:30–10:45	Tea				
10:45–12:45	Capacity development: intramural and extramural, including meeting national needs for specific skills		SAMRC EMC room, Building A, First Floor	Glenda Gray; Jeffrey Mphahlele; Thabi Maitin	
13:00–13:45	Lunch				
13:45–14:45	Self-initiated research grants		SAMRC EMC room, Building A, First Floor	Michelle Mulder; Clive Glass	
14:45–15:45	Interview: CFO; Human Resources; Legal Services		SAMRC EMC room, Building A, First Floor	Nick Buick; Brinton Spies; Nkosinathi Bhuka	
15:45–16:45	Parallel Sessions		Panel A: SAMRC Boardroom, Building A, Second Floor  Panel B: SAMRC EMC room, Building A, First Floor	Parallel Sessions	
	Session 1 (half-panel A) (Board room)	Session 2 (half-panel B) (EMC room)		Session 1 (Boardroom)	Session 2 (EMC room)
	<b>Maternal, child and women's health</b>	<b>HIV, AIDS, TB and other communicable diseases</b>		Heather Zar Shane Norris Rachel Jewkes Robert Pattinson	Gita Ramjee Salim Karim Paul van Helden/ Robin Warren Valerie Mizrahi Shabir Madhi
	Child and Adolescent Lung Health	HIV Prevention HIV-TB Pathogenesis and Treatment			
	Developmental Pathways for Health	Centre for Tuberculosis			
	Gender and Health	Molecular Mycobacteriology			
	Maternal and Infant Health Care Strategies	Respiratory and Meningeal Pathogens			
16:45–18:30	Debriefing and finalisation of next day's activities				

## WEDNESDAY 10 MAY 2017

Time	Activity	Location	Comments				
8:00–9:00	<b>Health systems strengthening</b> Biostatistics Burden of Disease Health Services to Systems Health Systems South African Cochrane Centre	SAMRC EMC room, Building A, First Floor	Carl Lombard Debbie Bradshaw Helen Schneider Catherine Mathews Charles Wiysonge				
9:00–10:00	<b>Public health innovation</b> Drug Discovery and Development Primate Unit and Delft Animal Centre Herbal Drugs	SAMRC EMC room, Building A, First Floor	Kelly Chibale Chesa Chauke Alvaro Viljoen				
10:00–11:00		SAMRC EMC room, Building A, First Floor					
11:00–11:15	Tea						
11:15–12:15	<table border="0" style="width: 100%;"> <tr> <td style="width: 33%; vertical-align: top;"> <b>Health promotion and disease prevention 1</b>            Alcohol, Tobacco and Other Drug            Anxiety and Stress Disorders            Environment and Health            Hypertension and Cardiovascular Disease         </td> <td style="width: 33%; vertical-align: top;"> <b>Health promotion and disease prevention 2</b>            Microbial Water Quality Monitoring            Non-communicable Diseases            Rural Public Health and Health Transition            Violence, Injury and Peace         </td> <td style="width: 34%;"></td> </tr> </table>	<b>Health promotion and disease prevention 1</b> Alcohol, Tobacco and Other Drug Anxiety and Stress Disorders Environment and Health Hypertension and Cardiovascular Disease	<b>Health promotion and disease prevention 2</b> Microbial Water Quality Monitoring Non-communicable Diseases Rural Public Health and Health Transition Violence, Injury and Peace		SAMRC EMC room, Building A, First Floor	Charles Parry Dan Stein/Soraya Seedat Angela Mathee Aletta Schutte	Anthony Okoh Andre Kenge Stephen Tollman Mohamed Seedat
<b>Health promotion and disease prevention 1</b> Alcohol, Tobacco and Other Drug Anxiety and Stress Disorders Environment and Health Hypertension and Cardiovascular Disease	<b>Health promotion and disease prevention 2</b> Microbial Water Quality Monitoring Non-communicable Diseases Rural Public Health and Health Transition Violence, Injury and Peace						
12:15–12:45	Unit Directors Forum	SAMRC EMC room, Building A, First Floor	Unit Directors				
12:45–13:15	Support Forum		CFO and team				
13:15–14:00	Lunch						
14:00–15:00	Dean of Faculty of Health Sciences, University of Cape Town and Faculty of Medicine and Health Sciences, University of Stellenbosch						
15:00–16:30	Debriefing and finalisation of next day's activities	SAMRC EMC room, Building A, First Floor					

## THURSDAY 11 MAY 2017

Time	Activity		Location	Comments	
8:30–9:30	DST		DST, Pretoria	Deputy Minister's Board room, Third Floor	
9:30–10:30	CSIR		DST, Pretoria	Deputy Minister's Board room, Third Floor	
10:30–10:45	Tea				
10:45–11:45	NRF		DST, Pretoria	Deputy Minister's Board room, Third Floor	
11:45–12:45	Parallel Sessions			Parallel Sessions	
	Session 1	Session 2	DST, Pretoria	Session 1	Session 2
	<b>Biomedical research</b>	<b>Cancer Centres</b>	DST, Pretoria		
	Antiviral Gene Therapy	Common Epithelial Cancer Research Centre		Patrick Arbutnot	Paul Ruff
	Bioinformatics Capacity Development	Gynaecological Cancer Research Centre		Alan Christoffels	Lynette Denny
	Biomedical Research and Innovation Platform	<b>HIV/TB Centres*</b>		Johan Louw	Gavin Churchyard
	Immunology of Infectious Disease	Advancing Care and treatment (ACT) for TB/HIV		Frank Brombacher	Neil Martinson
	Stem Cell Research and Therapy	Soweto Matlosana		Michael Pepper	
		SAMRC Collaborating Centre for HIV/AIDS and TB			
12:45–13:30	Lunch				
13:30–14:15	ASSAf		NDoH, Pretoria		
14:15–15:00	HSRC		NDoH, Pretoria		
15:00–16:00	Committee of Deans representative(s)		NDoH, Pretoria		
16:00–17:00	NHLS (NICD, NIOH)		NDoH, Pretoria		
17:00–18:00	NDoH		NDoH, Pretoria		

## \*Alternatives:

Centre for Tuberculosis Biomarker-Targeted Intervention, Mark Hatherill  
 Clinical and Community HIV-Tuberculosis Research Collaborating Centre, Graeme Meintjes  
 Centre for Basic and Translational Human TB Research, Adrie Steyn  
 TB Free through Research and Innovation, Keertan Dheda  
 Tuberculosis Collaborating Centre for Child Health (TB-CHILD), Mark Nicol  
 Tygerberg SAMRC Collaborating centre for HIV Laboratory Research, Wolfgang Preiser  
 Wits Clinical HIV/TB Research Unit, WITS Health Consortium, Ian Sanne  
 Wits RHI Collaborating Centre for HIV/AIDS, Helen Rees

## FRIDAY 12 MAY 2017

Time	Activity	Location	Comments
10:00–10:15	Tea		
10:15–12:30	Debriefing and report writing	Garden Court Hatfield, Pretoria	
12:30–13:00	Lunch		
13:00–14:30	Debriefing and report writing	Garden Court Hatfield, Pretoria	
14:30–14:45	Tea		
14:45–17:00	Debriefing and report writing	Garden Court Hatfield, Pretoria	
17:00	Review ends		

## ANNEXURE D: BIOGRAPHIES OF PANEL MEMBERS

## Professor Hoosen 'Jerry' Coovadia

Professor Coovadia is currently a director at MatCH Health Systems (Maternal, Adolescent and Child Health). MatCH Health Systems, with PEPFAR funding (through USAID), supports the KwaZulu-Natal Department of Health in their provision of HIV, TB and related diseases treatment, prevention and care services in the eThekweni and uMkhanyakude districts.

He is also the chairperson of the Board of the KwaZulu-Natal Children's Hospital Trust and, up until May 2015, was commissioner for the National Planning Commission for the Presidency of the Republic of South Africa. He also holds the title of Emeritus Professor of Paediatrics and Child Health and Emeritus Victor Daitz Professor of HIV/Aids Research at the University of KwaZulu-Natal. He was the scientific director at the Doris Duke Medical Research Centre at the University of Natal and the director of BioMed HIV/AIDS Research at the Nelson Mandela School of Medicine. He also held the international vice-chair of the Paediatric AIDS Clinical Trials Group (IMPAACT), the deputy chair of Transitional National Development Trust, co-chair of the Advisory Board to the Artists for a New South Africa's Amandla AIDS Fund and member of the South African Academy of Science. He has also been a member of a number of UN committees.

He holds honorary doctorates from the Universities of Cape Town, KwaZulu-Natal and the Witwatersrand, and

a Master of Science from the University of Birmingham, UK; an FCP from the College of Medicine of South Africa; and a Bachelor of Medicine and Bachelor of Surgery from the University of Bombay, India.

He has published more than 338 papers on factors causing morbidity, disability and mortality among Africa's children.

He has received a number of awards including the Nelson Mandela Award for Health and Human Rights (co-recipient with Judge Edwin Cameron), the Order of the Star of SA for Contributions to Democracy and Health, the 2013 Scientific Freedom and Responsibility Award from the American Association for the Advancement of Science (AAAS), the Lifetime Achievement Award from the HIV Congress in India, the Lifetime Achievement Award from the National Research Foundation, and most recently, the SAMRC President's Award for Exceptional Contributions to Medical Research.

## Professor Wieland Gevers

Professor Gevers is a South African citizen, born in 1937. He qualified in Medicine with First Class Honours at the University of Cape Town in 1960, and proceeded as a Rhodes Scholar to Oxford University to obtain his DPhil degree in 1966 under Sir Hans Krebs. He subsequently spent four postdoctoral years in the laboratory of another Nobelist, Dr Fritz Lipmann, at the Rockefeller University in New York before returning to South Africa in 1970.

He was senior deputy vice-chancellor (provost-equivalent), responsible for planning and academic processes at the University of Cape Town from 1992 until the end of 2002, and professor of Medical Biochemistry at Stellenbosch University from 1971 to 1977, and the same at UCT from 1978. He was (founder) president of the South Africa Biochemical Society from 1975–6, and again president from 1981–2. He was president of the Royal Society of South Africa from 1987–1989, and was president of the Academy of Science of South Africa from 1998 until 2004, then executive officer (2004–2008) and finally general secretary (2008–2010). He is a fellow of the Academy of Sciences of the Developing World, TWAS (elected 2002), was chair of the TWAS Committee on Medical Sciences, and recipient of the TWAS Gold Medal Lecture Award in 2009. He holds a Distinguished Teacher's Award and Life Fellowship from the University of Cape Town. Gevers was deputy chair of the national Ministerial Review Committee on the 'Science, Technology and Innovation Landscape' of South Africa, which released its report in 2012. He has chaired SETI Reviews of NACI (2003), the NRF (2005) and the SAMRC (2010).

Gevers directed SAMRC research units at both the University of Stellenbosch (1970–1977) and University of Cape Town (1979–1994). After his formal retirement from UCT at the end of 2002, he took up an appointment until 31 March 2005 as the (founding) interim director of UCT's Institute of Infectious Disease and Molecular Medicine (IIDMM).

### Mr F. Gray Handley

Mr Handley coordinates and facilitates international research activities for NIAID, the NIH institute with the largest international engagement. He serves on the boards of directors for scientific and biomedical research organisations in India and South Africa, has evaluated health research activities at USAID, the South African Medical Research Council and other organisations, and he leads joint research programmes that involve the NIH, and counterpart organisations in China, Brazil, India, South Africa, Turkey, Georgia and other countries. He has previously served as health attaché and HHS regional representative in southern Africa, at the US Embassy Pretoria, South Africa, where he led initiation of the PEPFAR programme; and as US science attaché and HHS representative in South Asia at the US Embassy New Delhi, India. At other times during his career, he served as associate director for Prevention Research and International Programs at the NIH Eunice Kennedy Shriver National Institute of Child Health and Human Development; associate director for international

relations at the NIH Fogarty International Center; and global public health advisor for the US Department of State, Bureau for International Organizations, the World Health Organization, the US Department of Defence and the US Office of Management and Budget. He has received many government service awards and has a master's of science in public health degree from the University of North Carolina, Chapel Hill.

### Professor Carel IJsselmuiden

Professor IJsselmuiden is a physician, epidemiologist, public health practitioner, academic and social entrepreneur, with qualifications from universities in Belgium, Netherlands, South Africa and the United States. He spent 7 years in rural medicine and public health; and 4 years in peri-urban and urban health care, HIV/AIDS control and environmental services management as deputy medical officer of Health for Johannesburg. He was appointed professor and head of department of the Department of Community Health at the University of Pretoria in 1995, where he became the founding director of the School of Health Systems and Public Health in 1999. He held this position until his appointment as executive director at COHRED in 2004. As such, he is also ex-officio member of the COHRED Board, president of COHRED USA, and COHRED Africa. He has published widely in applied research, nutrition, immunisation, environmental health, research capacity building, global public health education and ethics of international collaborative health research. As part of community service, he was director of the Elim Care Group Project, a health and development NGO in the north of South Africa, served on the Board of the Nokuthula Centre for Disabled Children in Alexandra township in South Africa, and offers strategic research and innovation development support to low- and middle-income countries. He holds two nationalities – South African and Netherlands – and has worked and lived in Africa, Europe, the United States and the Caribbean.

### Ms Glaudina Loots

Ms Loots is the director for Health Innovation at the Department of Science and Technology in South Africa and as such, is responsible for the implementation of the health components of the recently launched Bioeconomy Strategy for South Africa, and concentrates on enabling research and innovation that leads to discovery and evaluation of new drug and treatment regimes, the development of new vaccines and new robust diagnostics for identified diseases or conditions, as well as the development of medical devices.

The range of research activities that Ms Loots encourages as part of her portfolio includes the interrogation of indigenous knowledge, basic molecular science and genetics, chemistry and biochemistry, biotechnology, nanotechnology, nuclear physics, ICT, manufacturing processes, and engineering.

Amongst others, she serves on the South African National Health Research Committee; is a Board member of JEMBI Health Systems, an African-based not-for-profit NGO based in South Africa focusing on the development of eHealth and health information systems in developing countries, as well as the Biovac Institute, a public-private-partnership aimed at the local manufacturing of vaccines and biologics. Glaudina is also a member of the Ministerial Committee on Antimicrobial Resistance, as well as the South African National AIDS Council.

### Professor Nobelungu Julia Mekwa

Professor Mekwa is an independent consultant in health systems strengthening and intervention research. She holds a PhD in psychosocial nursing from the University of Washington, Seattle, USA; M Soc. Sci Degree from the University of the Free State; and a CSIR Advanced Leadership and Management Certificate. She currently serves on the Health Professions Council of South Africa (HPCSA) as a member of the Executive Committee; Human Rights, Ethics and Professional Practice Committee; and Professional Conduct Review Committee. Since 2010, she has been the chairperson of the South African Institute of Health Care Managers (SAIHCM), the primary purpose of which is the promotion of health-care management through technical support for health-care managers. Julia has served on the National Health Research Committee (NHRC) of South Africa as the deputy chair from its infancy in 2007 till January 2017, and previously

on its precursor, the Essential National Health Research Committee (ENHRC). From March 2011–2015, she held the position as mentor for Action Research projects at the Foundation for Professional Development (FPD) tasked with capacity development for health managers in assigned districts of the PEPFAR-funded USAID-FPD technical assistance programme.

As an academic, Professor Mekwa served at various universities, including the University of Cape Town, where she was appointed acting deputy vice chancellor (student affairs) for six months in 2004. In 2010, she was appointed as lead person in two commissioned engagements: (i) Nursing Education Curriculum Review – Infection Prevention and Control – commissioned by John Snow Inc (JSI); and (ii) Health Professions Skills Analysis, commissioned by the Health & Welfare SETA (SA). From 2008–2010, she became chair of the Lead Group on Participatory Research to develop HIV/AIDS nursing care competencies and the nursing curriculum for the SADEC region. In the past, she has participated as an NRF evaluator of applications for researcher rating.

At an international level, she participated as an invited member of the 2006 International Scientific Advisory Panel to review abstracts submitted to the RCN of the United Kingdom's Annual International Nursing Research conference; a keynote speaker at the 31st International Conference (Australian and New Zealand College of Mental Health Nurses); and a member of the International Scientific Advisory Panel responsible for reviewing abstracts for the RCN of the United Kingdom's Annual International Nursing Research Conference (2005). She was also an invited member of the International Scientific Advisory Panel to review abstracts submitted to the RCN of the United Kingdom's Annual International Nursing Research Conference (2006).



## ANNEXURE E: ACADEMY OF SCIENCE OF SOUTH AFRICA (ASSAf)

Published, peer-reviewed, independent, multi-perspective expert reports on matters relating to health

### A. CONSENSUS STUDIES

1. Title: **The State of Biosafety and Biosecurity in South Africa**  
Published by: ASSAf  
Publication date: 2015  
Publication type: Consensus study  
Chapters: Prelims, Chapter 1, Chapter 2, Chapter 3, Chapter 4, Chapter 5, Chapter 6, References and Appendices
2. Title: **Diversity in Human Sexuality - Implications for Policy in Africa**  
Published by: ASSAf  
Publication date: 2015  
Publication type: Consensus study
3. Title: **Report on Grouped Peer Review of Scholarly Journals in Health Sciences and Related Medical Fields**  
Published by: ASSAf  
Publication date: 2014  
Publication type: Consensus study
4. Title: **Preventing a Tobacco Epidemic in Africa**  
Published by: ASSAf  
Publication date: 2014  
Publication type: Consensus study
5. Title: **Improved Nutritional Assessment of Micronutrients**  
Published by: ASSAf  
Publication date: 2013  
Publication type: Consensus study
6. Title: **The PhD Study: An Evidence-based Study on how to meet the Demands for High-level Skills in an Emerging Economy**  
Published by: ASSAf  
Publication date: 2010  
Publication type: Consensus study

7. Title: **Revitalising Clinical Research in South Africa**  
Published by: ASSAf  
Publication date: 2009  
Publication type: Consensus study
8. Title: **HIV/AIDS, TB and Nutrition**  
Published by: ASSAf  
Publication date: 2007  
Publication type: Consensus study
9. Title: **Report on a Strategic Approach to Research Publishing in South Africa**  
Published by: ASSAf  
Publication date: 2006  
Publication type: Consensus study

### B. ASSAf PROCEEDINGS AND OTHER FORUM STUDIES UP TO 2017

1. Title: *Addressing the global challenges of multi-morbidity - lessons from South Africa*  
Published by: ASSAf and UK Academy of Medical Sciences  
Publication date: 2017  
Publication type: Proceedings Report
2. Title: *Poverty Reduction Proceedings Report*  
Published by: ASSAf  
Publication date: 2017  
Publication type: Proceedings Report
3. Title: *Social Determinants of Health Workshop*  
Published by: ASSAf  
Publication date: 2017  
Publication type: Proceedings Report
4. Title: *IAP Conference on Science Advice*  
Published by: ASSAf  
Publication date: 2016  
Publication type: Proceedings Report
5. Title: *Measuring Deprivation in order to Promote Human Development in South Africa*  
Published by: ASSAf  
Publication date: 2016  
Publication type: Proceedings Report

6. Title: *Environment and Health Symposium*  
Published by: ASSAf  
Publication date: 2015  
Publication type: Proceedings Report
7. Title: *Implementation of Core Competencies for Mental, Neurological and Substance Use Disorders*  
Published by: ASSAf  
Publication date: 2014  
Publication type: Proceedings Report
8. Title: *Changing Patterns of Non-Communicable Diseases*  
Published by: ASSAf  
Publication date: 2013  
Publication type: Proceedings Report

9. Title: *Preparing for the Future of HIV/AIDS in Africa: A Shared Responsibility*  
Published by: ASSAf  
Publication date: 2012  
Publication type: Proceedings Report

## 2011

1. Title: *The Emerging Threat of Drug Resistant Tuberculosis*  
Published by: ASSAf  
Publication date: 2011  
Publication type: Proceedings Report
2. Title: *Evidence-based Practice*  
Published by: ASSAf  
Publication date: 2006  
Publication type: Proceedings Report

## ANNEXURE F: ABBREVIATIONS

<b>AIDS</b>	acquired immune deficiency syndrome	<b>GSPA</b>	Global Strategy and Plan of Action
<b>AMedSci</b>	Academy of Medical Sciences	<b>HDI</b>	historically disadvantaged institution
<b>ASEAN-NDI</b>	Association of Southeast Asian Nations Network for Drugs, Diagnostics, Vaccines, and Traditional Medicines Innovation	<b>HIV</b>	human immunodeficiency virus
<b>ASSAf</b>	Academy of Science of South Africa	<b>HSRC</b>	Human Sciences Research Council
<b>AU</b>	African Union	<b>ICMR</b>	Indian Council for Medical Research
<b>BRIC</b>	Brazil, Russia, India and China	<b>ICPO</b>	Institute of Cytology and Preventive Oncology
<b>CHED</b>	Commission on Higher Education	<b>IP</b>	intellectual property
<b>CLAHRC</b>	Collaborations for Leadership in Applied Health Research and Care	<b>IPHR</b>	International Partnership for Human Rights
<b>CD</b>	Communicable Disease	<b>IOP</b>	Institute of Pathology
<b>COHRED</b>	Council on Health Research for Development	<b>IRFA</b>	Indian Research Fund Association
<b>COMSA</b>	Colleges of Medicine of South Africa	<b>MCC</b>	Microbial Containment Complex
<b>CPRD</b>	Clinical Practice Research Datalink	<b>MTEF</b>	Medium-Term Expenditure Framework
<b>CRME</b>	Centre for Research in Medical Entomology	<b>NAPHISA</b>	National Public Health Institute of South Africa
<b>CRN</b>	Clinical Research Network	<b>NARI</b>	National AIDS Research Institute
<b>CRIS</b>	Clinical Record Interactive Search	<b>NCD</b>	Non-Communicable Disease
<b>CSIR</b>	Council for Scientific and Industrial Research	<b>NCJILOMD</b>	National JALMA Institute for Leprosy and Other Mycobacterial Diseases
<b>DALY</b>	disability-adjusted life year	<b>NCLAS</b>	National Centre for Laboratory Animal Science
<b>D-CRIS</b>	Dementia Clinical Record Interactive Search	<b>NDOH</b>	National Department of Health
<b>DG</b>	director general	<b>NDP</b>	National Development Plan
<b>DHET</b>	Department of Higher Education and Training	<b>NHI</b>	National Health Insurance
<b>DOH</b>	Department of Health	<b>NHS</b>	National Health Service
<b>DOST</b>	Department of Science and Technology	<b>NHLS</b>	National Health Laboratory Services
<b>DST</b>	Department of Science and Technology	<b>NHRC</b>	National Health Research Committee (South Africa)
<b>ECSP</b>	Economic Competitiveness Support Package	<b>NHRC</b>	National Health Research Council
<b>EMC</b>	Executive Management Committee	<b>NHRD</b>	National Health Research Database
<b>ERC</b>	Enterovirus Research Centre	<b>NICD</b>	National Institute for Communicable Diseases
<b>EU</b>	European Union	<b>NIE</b>	National Institute of Epidemiology
<b>FDTRC</b>	Food and Drug Toxicology Research Centre	<b>NICED</b>	National Institute of Cholera and Enteric Diseases
<b>GDP</b>	gross domestic product	<b>NIHR</b>	National Institute for Health Research
		<b>NIIH</b>	National Institute of Immunohaematology

<b>NIIVP</b>	National Institute for Injury and Violence Prevention	<b>RFI</b>	research fairness initiative
<b>NIMR</b>	National Institute of Malaria Research	<b>RFP</b>	request for proposals
<b>NIMS</b>	National Institute of Medical Statistics	<b>SA</b>	South Africa
<b>NIN</b>	National Institute of Nutrition	<b>SAC</b>	Scientific Advisory Committee
<b>NINCD</b>	National Institute for Non-Communicable Diseases	<b>SADC</b>	South African Development Community
<b>NIOSH</b>	National institute for Occupational Safety and Health	<b>SAMRC</b>	South African Medical Research Council
<b>NIRRH</b>	National Institute for Research in Reproductive Health	<b>SARIMA</b>	South African Research Information and Management Association
<b>NIV</b>	National Institute of Virology	<b>SDG</b>	sustainable development goals
<b>NOCRI</b>	NIHR Office for Clinical Research Infrastructure	<b>SHIP</b>	Strategic Health Innovations Partnerships
<b>NRF</b>	National Research Foundation	<b>SIR</b>	self-initiated research
<b>NRIND</b>	National Research Institute for Nutritional Diseases	<b>SPV</b>	special purpose vehicle
<b>NSI</b>	National Science Institute	<b>STI</b>	science, technology and innovation
<b>NT</b>	National Treasury	<b>STIIL</b>	STI institutional landscape
<b>NUHRA</b>	National Unified Health Research Agenda	<b>TKDL</b>	Traditional Knowledge Digital Library
<b>PCHRD</b>	Philippine Council for Health Research and Development	<b>TRC</b>	Tuberculosis Research Centre
<b>PFMA</b>	Public Finance Management Act	<b>UCT</b>	University of Cape Town
<b>PHRR</b>	Philippine Health Research Registry	<b>UDF</b>	Unit Directors' Forum
<b>PNHRS</b>	Philippine National Health Research System	<b>UKRI</b>	UK Research and Innovation
<b>R&amp;D</b>	research and development	<b>UN</b>	United Nations
		<b>UPM-NIH</b>	University of the Philippines Manila - National Institutes of Health
		<b>VCRC</b>	Vector Control Research Centre
		<b>WHO</b>	World Health Organization





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