SOUTH AFRICAN MEDICAL RESEARCH COUNCIL

Building a Healthy Nation Through Research

MRC Annual Report 2005/06
Presentation to Parliamentary Portfolio Committee on Health
12 June, 2007

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BA(Oxon) MBBS(London) FRCP (UK) MD (London) FMASSAf PMD (Harvard)
President, MRC
Mandate of the MRC

The mandate of the South African Medical Research Council is legislated in terms of Act 58, 1991:

‘the objects of the MRC 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 may be assigned to the MRC by or under this Act’.
Vision and Mission

The vision of the MRC is:

‘Building a healthy nation through research’

The mission of the MRC is:

‘to improve the nation’s health and quality of life through promoting and conducting relevant and responsive health research’
MRC Shared Values

‘Cared’

• Communication  : transparency, and freedom to challenge

• Accountability  : responsibility, teamwork, leadership and participation

• Respect  : dignity, honesty, fairness and integrity

• Excellence and innovation

• Development  : reward and recognition
MRC Strategic Objectives

The MRC mission is implemented through the following 9 Strategic Objectives:

**Promotion and conduct of research**
- Research Strategy and Business Plan

**Professional support for research**
- Financial Model Strategy & Plan
- Opportunity and Risk Management
- Capacity Development
- Transformation and Development Plan

**Research Translation**
- Innovation Management and Technology Transfer
- Informatics and Knowledge Management
- Research Translation
- Stakeholder Management
# MRC RESEARCH UNITS

<table>
<thead>
<tr>
<th>Category</th>
<th>Research Units</th>
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<tbody>
<tr>
<td>HIV and AIDS</td>
<td>South African AIDS Vaccine Initiative (SAAVI)</td>
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<td></td>
<td>HIV Prevention Research Unit</td>
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<td>Genital Ulcer Disease Research Unit</td>
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<td>Tuberculosis</td>
<td>Clinical and Biomedical Tuberculosis Research Unit</td>
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<td>Tuberculosis Epidemiology and Intervention Research Unit</td>
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<td>Centre for Molecular and Cellular Biology</td>
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<td>Molecular Mycobacteriology</td>
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<td>Infectious Disease</td>
<td>Diarrhoeal Pathogens Research Unit</td>
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<td>Immunology of Infectious Disease Research Unit</td>
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<td>Inflammation and Immunity Research Unit</td>
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<td>Malaria Research Lead Programme</td>
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<td>Respiratory and Meningeal Pathogens Research Unit</td>
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<td>Cardiovascular Disease</td>
<td>Chronic Diseases of Lifestyle Research Unit</td>
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<td>and Diabetes</td>
<td>Diabetes Research Group</td>
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<td>Interuniversity Cape Heart Research Group</td>
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<td>Exercise and Sports Science Research Unit</td>
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<td>Cancer</td>
<td>Cancer Epidemiology Research Group</td>
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<td>PROMEC Unit</td>
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<td>Oesophageal Cancer Research Group</td>
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<td>Health Promotion</td>
<td>Alcohol and Drug Abuse Research Unit</td>
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<td>Health Promotion and Behavioural Interventions Research Unit</td>
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<td>MRC RESEARCH UNITS</td>
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<td><strong>Public Health</strong></td>
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<td>Biostatistics Unit</td>
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<td>Burden of Disease Research Unit</td>
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<td>Cochrane Centre</td>
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<td>Health Policy Research Group</td>
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<td>Health Systems Research Unit</td>
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<td>Rural Public Health and Health Transition Research Unit</td>
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<td>Telemedicine Lead Programme</td>
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<tr>
<td><strong>Genomics and Proteomics</strong></td>
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<tr>
<td>Bioinformatics Capacity Development Research Unit</td>
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<td>Bone Research Unit</td>
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<td>Human Genetics Research Unit</td>
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<td>Human Genomic Diversity and Disease Research Unit</td>
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<td>Liver Research Centre</td>
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<td>Molecular Hepatology Research Unit</td>
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<td>Receptor Biology Research Group</td>
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<td><strong>Women, Maternal and Child Health</strong></td>
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<td>Gender and Health Research Unit</td>
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<tr>
<td>Maternal and Infant Health Care Strategies Research Unit</td>
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<td>Mineral Metabolism Research Unit</td>
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<td><strong>Nutrition</strong></td>
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<td>Nutrition Intervention Research Unit</td>
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<td><strong>Environment and Health</strong></td>
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<td><strong>Brain and Behaviour</strong></td>
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<td>Medical Imaging Research Unit</td>
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<td>Anxiety and Stress Disorders Research Unit</td>
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<td><strong>African Traditional Medicines</strong></td>
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<tr>
<td>South African Traditional Medicines Research Unit</td>
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<tr>
<td>Indigenous Knowledge Systems Lead Programme</td>
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# Growth in MRC Income

<table>
<thead>
<tr>
<th>Source of income</th>
<th>2004/05</th>
<th>2005/06</th>
<th>2006/07</th>
<th>2007/08</th>
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<tbody>
<tr>
<td><strong>Government Grants</strong></td>
<td>156 695</td>
<td>154 388</td>
<td>157 284</td>
<td>180 222</td>
</tr>
<tr>
<td><strong>Contracts, Grants and Services Rendered</strong></td>
<td>128 560</td>
<td>162 429</td>
<td>176 547</td>
<td>237 216</td>
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<tr>
<td><strong>Other income</strong></td>
<td>19 005</td>
<td>17 537</td>
<td>18 233</td>
<td>39 585</td>
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<tr>
<td><strong>Total</strong></td>
<td>304 260</td>
<td>334 354</td>
<td>352 064</td>
<td>457 023</td>
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<tr>
<td><strong>Year by year Increment</strong></td>
<td>-</td>
<td>10%</td>
<td>5%</td>
<td>30%</td>
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Productivity

INPUTS

R157 Million Government (20% of government health research expenditure)
R194 Million
R351 Million (R457 million in 2007/08)

OUTPUTS

4 NRF ‘A’ Rated scientists
2 Orders of Mapungubwe
618 Peer reviewed publications in 2005; 670 in 2006 (8% increase year on year)
   (40% of South Africa’s health research output)
20 Patents – current and pending; 4 new patents p.a.
38 Technical reports
49 PhD graduates per annum
50 M graduates per annum
854 staff in Jan 2007 (increase of 91 or 12%)
Transformation

<table>
<thead>
<tr>
<th>Occupational Level</th>
<th>Black Nov 2006</th>
<th>Female Nov 2006</th>
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<tbody>
<tr>
<td>Executive Management</td>
<td>80 %</td>
<td>20 %</td>
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<tr>
<td>Senior Management</td>
<td>50 %</td>
<td>43 %</td>
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<tr>
<td>Middle Management</td>
<td>53 %</td>
<td>62 %</td>
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<tr>
<td>Skilled</td>
<td>85 %</td>
<td>76 %</td>
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<tr>
<td>Semi-Skilled</td>
<td>91 %</td>
<td>66 %</td>
</tr>
<tr>
<td>Unskilled</td>
<td>99 %</td>
<td>39 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>81 %</strong></td>
<td><strong>67 %</strong></td>
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</tbody>
</table>

854 personnel: in the next 3 – 5 years the MRC expects more black and women scientists to be brought into the research process at the doctoral and postdoctoral level:

- 55% of managers and researchers are black (178/320)
- 33% of managers and researchers are black African (104/320)
- 55% of managers and researchers are female (173/320)

The opportunity now exists to complete that transformation over the next three years resulting in an MRC that conducts research, relevant and responsive to the health needs of the people of South Africa; and whose personnel more fully reflect the demographic profile of South Africa.
Research  Translation

MRC vision: ‘building a healthy nation through research’

Research makes no difference to health unless it is translated

**GRIPPP** : Getting Research results Into :

- Policy
- Practice
- Promotion and
- Product
Research Highlights and Research Translation
Antenatal Clinic HIV and Syphilis Survey 2006
HIV and AIDS

- HIV Prevention Research Unit (HPRU) co-hosted the International Microbicide Conference 2006; and are currently conducting 4 of the 5 late stage global vaginal microbicide clinical trials. A successful microbicide could reduce HIV transmission by 50% and would be woman-controlled.

- HPRU awarded NIH Clinical Trial Unit to conduct clinical trials in microbicides, HIV vaccines, ARVs.

- HPRU trial on ARVs for early seroconverters.

- Cochrane Centre STEPP: Cotrimoxazole reduces mortality in AIDS by 30%.

- Comprehensive Plan: 282 000 on Rx, Mortality reduced from 30% p.a. to 10 - 15%.
  Research funds allocated R12m.
Tuberculosis

• Centre for Molecular and Cellular Biology: molecular analysis through DNA-sequencing for resistant TB

• Molecular Mycobacteriology Research Unit: using targeted gene knockout revealed that mycobacteria are capable of modulating and redirecting the aerobic flow of electrons in response to pathway blockages

• Tuberculosis Epidemiology and Intervention Research Unit: in MDR-TB 90% cured in two-year treatment regimen. XDR TB.

• R9.5 million MDR TB rapid diagnostic demonstration begun with FIND Diagnostics and NHLS
Influenza and Pneumonia

- Influenza is the most likely infection to cause a global pandemic
- Respiratory and Meningeal Pathogens Research Unit: both HIV-negative and positive children in 30–40% of hospitalisations with influenza-associated pneumonia were due to bacterial co-infection with *Streptococcus pneumoniae*
- These episodes were prevented by administration of pneumococcal conjugate vaccine
- Prof MBewu appointed to GAVI Expert Group for US$1.5 billion programme for Advanced Market Commitments to provide pneumococcal vaccines
Malaria

- Lubombo Spatial Development Initiative: Global Fund US$20 million
- Rapid diagnostic tests for malaria
- WHO recommends vector control by indoor residual spraying with DDT
- Parasite control by definitive diagnosis and effective treatment, especially of pregnant women
- WHO: artemisinin-based combination therapy
Women’s Health

- Gender and Health Research Unit – in a regional study, Stepping Stones, 19% of men aged 14 – 26 interviewed reported having forced a woman to have sex. 8% reported having been sexually violent towards an intimate partner.

- Health Promotion Research and Development Group – Youth Risk Behaviour Survey 14% of boys aged 11 to 20 reported forcing someone to have sex with them.

- Sexual assault, violence and depression were common amongst HIV positive women; and amongst HIV negative women there was a high prevalence of sexually transmitted infection, high rates in a of unprotected sexual intercourse with risk of HIV superinfection with other HIV strains.

- Mens’ Health and Behaviour research: MOU with Eastern Cape House of Traditional Leaders. Circumcision study.
Burden of Disease Research Unit Comparative Risk Assessment Study using data from National Burden of Disease Study 2000 showed BOD by DALYs:

1. Unsafe sex/STD 32%
2. Violence 9%
3. Alcohol 7%
4. Tobacco 4%
5. Obesity 3%
6. Underweight 3%
7. Unsafe water 3%
8. High BP 2%
9. Diabetes 2%
10. High cholesterol 1%
Chronic Diseases

- Health Promotion Directorate of the National Department of Health and Exercise Science and Sports Medicine, Health Promotion Research and Development, and Chronic Diseases of Lifestyle Research Units

- Youth Fitness Charter; Vuka! South Africa; and National Health Promotion Strategy

- The National Youth Risk Behaviour Survey 2002 also influential in this regard – hopefully to be repeated in 2008

- Tobacco Products Control Amendment Bill 2007: snus as a ‘gateway drug’ for nicotine addiction, increased fines for smoking in public places, ignition, content
Environment and Health

- Lead free petrol from 1 January 2006

- National Department of Health and Environment and Health Research Unit: lead discovered in paint on children’s toys

- Nationwide lead awareness campaign by the Minister of Health

- Paraffin Safety: Crime, Violence and Injury Research Lead Programme policy brief on packaging of paraffin to prevent poisoning of children, and shack fires
Alcohol and Drug Abuse

- Alcohol and Drug Abuse Research Unit – increase in abuse of crack cocaine, methamphetamine (‘tik’) and methcathinone (‘CAT’)

- HIV prevention intervention in substance-abusing resulted in increased condom use, reduced alcohol and drug use
Nutrition

• Chronic Diseases of Lifestyle Unit – showed that a food intervention in a randomised controlled trial in a township of Cape Town in people with high BP could reduce BP

• Nutritional Intervention Research Unit – vitamin A important in resistance against diarrhoea and respiratory disease. NIRU showed that the orange-fleshed sweet potato provided two-and-a-half times the recommended dietary allowance of vitamin A for 4–8-year-olds.

• Distributed 10 000 calendar-posters promoting the vegetable; 4 000 orange-fleshed sweet potato cuttings
Maternal and Child Health

- Diarrhoeal Pathogens Research Unit - rotavirus vaccine phase II trials: to determine vaccine dosage; and involving HIV-positive children

- Maternal and Infant Health Care Strategies Research Unit: monitoring and evaluation of perinatal care in South Africa and in developing and testing implementation methodologies for new health strategies. Sentinel sites using the Perinatal Problem Identification Programme (PPIP)
African Traditional Medicines

- South African Traditional Medicines Research Unit – antimalarial activity in vitro of curcumin can be further improved by rationally-designed chemical modifications. Curcumin is a major component of turmeric spices used in food.

- Indigenous Knowledge Systems Research Lead Programme - state-of-the-art traditional medicines manufacturing facility has been established in Delft, Cape Town. Adjacent are quality assurance and quality control laboratories for validating traditional medicinal products

- Phase IIb clinical trails of 4 plant combination as immunemodulator for AIDS. Extracts of South African plant tested for activity against HIV infected PBMC cells
Telemedicine

- Telemedicine Lead Programme - primary health care telemedicine workstation has been developed specifically for developing countries. Testing site in Grabouw

- Evaluating the Mindset health channel’s patterns of use and the effectiveness of its content: the channel is capable of increasing public awareness about HIV and AIDS and also of enhancing the knowledge of health professionals about the epidemic

- R17,716,435 Telemedicine PPP project by the Department of Science & Technology in KwaZulu-Natal

- R750,000.00 for the monitoring and evaluation of the existing and planned telehealth systems in the Eastern Cape by the Provincial Department of Health
South African AIDS Vaccine Initiative

- Making the vaccines
  - Actuarial assessments
  - Immunology assessment
    - Animal
    - Human
  - Data & bioinformatics
- Testing the vaccines
  - Behavioural science
- Community involvement
  - Ethical issues

Related Organizations:
- SACAPI
- MRC
- CARE
- SANBI
- University of Western Cape
- University of Cape Town
South African AIDS Vaccine Initiative

- Third round of funding for 2006–2009
- Grants totalling R50 million a year
- Competitive and internationally peer-reviewed evaluation mechanism
- Vaccine design and construction
- 22 Principal investigators
- 14 women (60%) and 10 black investigators (40%)
- Three historically disadvantaged institutions and in rural areas
- Clinical trial sites doubled from three to six – encompassing six of the nine provinces of South Africa
- Community and behavioural science components of the research programme strengthened
- Four Phase I trials, plus two Phase II trials completed or underway. Phase III trials should begin within a few years
- Vaccine manufacture to be established at Biovac through technology transfer agreement with Italy via 23 million euro HIV vaccine clinical trial programme involving Department of Health, MRC and Biovac
Commercialisation Entities

Spinout companies and licensing agreements

* Gene Care: DNA-based cardiac diagnostic test
* Stereotactic Neurosurgical Device
* Carotino
* Diabetes: SADEC
* Telemedicine
* Genetic Ancestry
* Traditional Medicines
Conclusion

• The MRC continues to grow from strength to strength in terms of the depth and breadth of its research portfolio

• Increase in research publication outputs over the twelve-month period

• Growth in the external income of the organisation

• Increasing numbers of black and female scientists at doctoral and postdoctoral level

• Translation of research results into policy, practice, products and health promotion

• The MRC moves into the future confident that it can deliver on its mandate of using research, development and technology transfer to provide new health solutions for improving the health and quality of life of all South Africans
Building a healthy nation through research

http://www.mrc.ac.za