CELEBRATES SCIENCE

JUNE 2017
DOI: 10.3389/fimmu.2017.00690
Impact Factor: 6.429

Summary:
A bidirectional communication between the immune and endocrine systems exists and facilitates optimum responses in the host during infections. This is in part achieved through changes in secretion patterns of hypothalamic hormones induced by inflammatory cytokines. The aim of this study was to elucidate the immune–endocrine alterations during tuberculosis (TB) treatment in patients with cured and failed TB treatment outcomes. Blood samples were collected from 27 cured and 10 failed patients and hormone as well as cytokine concentrations quantified at baseline, week 4, and month 6 of TB treatment. Hormone profiles of the two treatment outcome groups were different from each other prior to as well as during TB treatment. Treatment response effects were observed for cortisol, estradiol, T3, T4 ghrelin, leptin, amylin, adiponectin, and dehydroepiandrosterone (DHEA). Trends suggest that T4, amylin, and DHEA concentrations were different between treatment outcomes, although these did not reach statistical significance. Relationships between endocrine and inflammatory markers and the biological pathways involved differed between cured and failed treatment patients. These results highlight the complex interaction between the endocrine and immune system during active TB disease and throughout treatment and suggest that endocrine markers in conjunction with inflammatory markers may be useful in predicting unfavorable treatment outcomes.
Article:
DOI: 10.1016/j.ijcard.2017.06.025
Impact Factor: 6.189

Summary:
Background: Oestradiol has a protective effect on coronary artery health in women but its effect on men is controversial. A translational approach was followed to assess whether sex hormone levels are associated with Silent Myocardial Ischemia (SMI) and hypertension risk over a 3-year period.

Methods: Participants included 89 Black and 91 White men (aged 21–63 years) participating in both phases of the Sympathetic activity and Ambulatory Blood Pressure in Africans prospective study. Fasting blood samples, ambulatory blood pressure and 2-lead ECG recordings were obtained.

Results: No difference in the levels of the various baseline serum T fractions between the two ethnic groups occurred. Oestradiol of the Black men increased by 54.2% compared to a decrease of 24.1% in the White men. Changes in total oestradiol (adjusted R2 = 0.33, β = −0.31, p = 0.023) and free oestradiol (adjusted R2 = 0.34, β = −0.33, p = 0.019) were inversely associated with changes in SMI in the Black men but not in White men. Baseline serum nitric oxide metabolites were inversely associated with ΔSMI in the Blacks only (adjusted R2 = 0.33, β = −0.28, p = 0.047). Chronic SMI was associated with 24 h hypertension in Blacks [cut point 1.5 events: Area under the curve 0.71 (95% CI: 0.60, 0.82); p = 0.006; with sensitivity/specificity 44%/94%].

Conclusions: Chronic SMI events facilitated future ischemic heart disease in Black men. Up-regulated free oestradiol seems to be involved in the protection of the heart against SMI and hypertension risk in Black but not in White men. A similar protective role for testosterone could however not be shown.
Article:
Nono JK, Ndlovu H, Abdel Aziz N, Mpotje T, Hlaka L, Brombacher F.
Interleukin-4 receptor alpha is still required after Th2 polarization for the maintenance and the recall of protective immunity to Nematode infection. PLoS Neglected Tropical Diseases. 2017 Jun 26;11(6):e0005675.
DOI: 10.1371/journal.pntd.0005675
Impact Factor: 3.834

Summary:
There is currently no vaccine against parasitic nematodes and the knowledge on the mechanisms by which protective immunity against this class of parasites is achieved is continuously expanding. Nematode parasites trigger a host protective type 2 immune response via interleukin-4 receptor alpha (IL-4Rα). Despite this central role, it is not known whether IL-4Rα has a role in maintaining host type 2 immune responses following polarization. To determine the role of IL-4Rα after polarization, we used a recently established strain of rosaCreERT2-/+IL-4Rα-/-lox mice where il4rα gene deletion can be temporally controlled. We show that sustained expression of IL-4Rα is required for the maintenance of type 2 immune responses and protective immunity following interruption after polarization with Nippostrongylus brasiliensis primary infection. Moreover, we show by temporal deletion of IL-4Rα prior to secondary infection with N. brasiliensis that signaling via this receptor drives more efficient recall of type 2 immune responses and clearance of the parasites. Together, this study demonstrates that sustained IL-4Rα mediated signaling is required for the maintenance of anti-nematode type 2 immune responses, describing a novel function for IL-4Rα that is distinct from its role in immune polarization.
Summary
South Africa faces a severe and growing obesity epidemic. Obesity and its co-morbidities raise public and private expenditures on healthcare. Sugary beverages are heavily consumed in South Africa and are linked to the onset of overweight and obesity. Excise taxation of sugary beverages has been proposed and adopted in other settings as a means to reduce harms from their consumption. A tax on the sugar content of non-alcoholic beverages has been proposed for implementation in South Africa, however, the public health effects and revenue raising potential of this measure hinges on estimates of the targeted beverages own- and cross-price elasticities. This study applies demand system methods by combining expenditure survey data and sub-national price data to provide the first estimates of price and expenditure elasticities for categories of soft drinks that would be subject to South Africa's proposed sugary beverage tax. The results suggest that demand for these products is sufficiently price-elastic such that a significant reduction in consumption may result from a tax.
**Summary**

**Objective:** A limited understanding exists of the relationship between disability and older persons’ living arrangements in Low and Middle-Income Countries (LMICs). We examine the associations between living arrangements, disability, and gender for individuals older than 50 years in rural South Africa.

**Method:** Using the Study on global AGEing and adult health (SAGE) survey and Agincourt Health and socio-Demographic Surveillance System (HDSS) data, we explore older persons’ self-reported disability by living arrangements and gender, paying particular attention to various multigenerational arrangements.

**Results:** Controlling for past disability status, a significant relationship between living arrangements and current disability remains, but is moderated by gender. Older persons in households where they may be more “productive” report higher levels of disability; there are fewer differences in women’s than men’s reported disability levels across living arrangement categories.

**Discussion:** This study underscores the need to examine living arrangements and disability through a gendered lens, with particular attention to heterogeneity among multigenerational living arrangements. Some living arrangements may take a greater toll on older persons than others. Important policy implications for South Africa and other LMICs emerge among vibrant debates about the role of social welfare programs in improving the health of older individuals.
1. **INTRAMURAL RESEARCH UNITS**

**Alcohol, Tobacco and Other Drug**
   DOI: 10.1016/j.drugalcdep.2017.04.010
   **Impact Factor:** 3.222

**Centre for Tuberculosis**
   DOI: 10.3389/fimmu.2017.00690
   **Impact Factor:** 6.429

   DOI: 10.1016/j.cmi.2017.05.026
   **Impact Factor:** 5.292

   DOI: 10.1164/rccm.201703-0556OC
   **Impact Factor:** 13.204

**Gender and Health**
   DOI: 10.1371/journal.pone.0178135
   **Impact Factor:** 2.806

   DOI: 10.1186/s12889-017-4525-z
   **Impact Factor:** 2.265

   **Impact Factor:** None

   **Impact Factor:** None
**Health Systems**
   **Impact Factor:** 1.794

   **Impact Factor:** 2.916

   **Impact Factor:** 2.916

**HIV Prevention**
   **Impact Factor:** 2.806

**Non-Communicable Disease**
   **Impact Factor:** 7.738

   **Impact Factor:** None

3. Rodgers AL, Jappie-Mahomed D, **van Jaarsveld PJ**. Different effects of Gamma-Linolenic Acid (GLA) supplementation on plasma and red blood cell phospholipid fatty acid composition and calcium oxalate kidney stone risk factors in healthy subjects from two race groups with different risk profiles pose questions about the GLA-arachidonic acid-oxaluria metabolic pathway: Pilot study. Urolithiasis. 2017 Jun 16. DOI: 10.1007/s00240-017-0989-7
   **Impact Factor:** 1.816


Office of AIDS

South African Cochrane Centre

**Impact Factor: 2.369**


**Impact Factor: 2.157**

### 2. EXTRAMURAL RESEARCH UNITS

#### Bioinformatics Capacity Development

**Impact Factor: 1.754**


**Impact Factor: 1.557**

#### Child and Adolescent Lung Health

**Impact Factor: 2.432**


**Impact Factor: 2.797**


**Impact Factor: 2.214**

#### Developmental Pathways for Health

**Impact Factor: 2.101**
Hypertension and Cardiovascular Disease

Immunology of Infectious Disease

Microbial Water Quality Monitoring

Risk and Resilience in Mental Disorders

Rural Public Health and Health Transition
*Impact Factor: 3.434*

*Impact Factor: 2.707*

*Impact Factor: 1.671*

6. **GRANT FUNDED RESEARCH**

*DOI: 10.1016/j.nmd.2017.06.009*
*Impact Factor: 2.969*

*DOI: 10.1186/s13063-017-1992-6*
*Impact Factor: 1.969*

*DOI: 10.1371/journal.ppat.1006333*
*Impact Factor: 6.608*

*DOI: 10.1128/jcm.00289-17*
*Impact Factor: 3.712*

*DOI: 10.1016/j.virusres.2017.06.002*
*Impact Factor: 2.468*

*DOI: 10.1097/QAI.0000000000001349*
*Impact Factor: 3.935*

Impact Factor: None


Impact Factor: 2.470

4. RESEARCH CENTRES

Advancing Care and Treatment (ACT) For TB/HIV

Impact Factor: 17.686

UP Centre for Sustainable Malaria Control

Impact Factor: 2.715
5. **RESEARCH UNITS WITH NO QUALIFYING PUBLICATIONS**

**Intramural**
- Biomedical Research and Innovation Platform
- Biostatistics
- Burden of Disease
- Environment and Health
- Office of Cancer
- Office of Malaria
- Office of Tuberculosis
- Primate
- Violence, Injury and Peace

**Extramural**
- Antiviral Gene Therapy
- Common Epithelial Cancer
- Diarrhoeal Pathogens
- Drug Discovery and Development
- Gynaecological Cancer
- Health Services to Systems
- Herbal Drugs
- HIV/TB Pathogenesis and Treatment
- Human Genetics
- Maternal and Infant Health Care Strategies
- Medical Imaging
- Molecular Mycobacteriology
- Prospective Gastrointestinal Cancer
- Receptor Biology
- Respiratory and Meningeal Pathogens
- Stem Cell Research and Therapy

**Research Centres**
- Centre for Basic and Translational Human TB Research
- Centre for Tuberculosis Biomarker-Targeted Intervention
- Clinical and Community HIV-Tuberculosis Research Collaborating Centre
- Soweto Matlosana SAMRC Collaborating Centre for HIV/AIDS and TB
- TB Free through Research and Innovation
- Tuberculosis Collaborating Centre for Child Health (TB-CHILD)
- Tygerberg SAMRC Collaborating centre for HIV Laboratory Research
- UCT Collaborating Centre for Optimising Antimalarial Therapy in South Africa
- Wits Clinical HIV/TB Research Unit, WITS Health Consortium
- Wits Collaborating Centre for Multi-Disciplinary Research on Malaria
- Wits RHI Collaborating Centre for HIV/AIDS
6. **GRANTS AWARDED**

<table>
<thead>
<tr>
<th>SAMRC Unit</th>
<th>Funder</th>
<th>Main Funder</th>
<th>Project Title/Description</th>
<th>Contract Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment and Health</td>
<td>CSIR</td>
<td>CSIR</td>
<td>Assessment of human health in Highveld Priority Area</td>
<td>80 000 Rand</td>
</tr>
<tr>
<td>Gender and Health</td>
<td>Wellsprings Advisors LLC</td>
<td>Wellsprings Philanthropic Fund</td>
<td>Forum and SVRI Grant Supplementary Funding Support</td>
<td>1 962 255 Rand $150 000</td>
</tr>
<tr>
<td>HIV Prevention</td>
<td>Magee-Women’s Research Institute &amp; Foundation</td>
<td>NIH</td>
<td>Leadership &amp; Operations Center: Microbicides Trials Network – Amendment 1 - additional funding</td>
<td>29 307 717 Rand $2 240 360</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>R31 289 972</strong> Rand <strong>$2 390 360</strong></td>
</tr>
</tbody>
</table>