

MRC/NHLS/WITS Cancer Epidemiology Research Group



Acting manager: Ms Margaret Urban

The Cancer Epidemiology Research Group (CERG) aims to identify and quantify causes of human cancers in South Africa, emphasising those potentially preventable or controllable, in order to inform health policy. The focus is on:

- Widespread exposures (eg. tobacco, HIV infection);
- Potential and escalating contributing causes (eg. human papillomaviruses, indoor pollution, hormonal contraceptives); and
- Major cancers affecting South Africans (eg. breast, cervix, prostate, oesophagus, lung) and cancers that are increasing in incidence (eg. Kaposi sarcoma, non Hodgkin lymphoma).

The decision in January 2009 to place the CERG under the umbrella of the National Institute for Occupational Health should go a long way in assisting the Group with challenges of staffing and leadership.

Sources of research funding

The bulk of external funding came from the Medical Research Council. Additional funding was received from the University of the Witwatersrand and Cancer Council New South Wales.

Surveillance

The CERG assisted the National Cancer Registry with production of its latest on-line report (Incidence of cancers 2000 and 2001). Data were provided to the Gauteng Department of Health for their report entitled 'Health in Gauteng Status Report 2006/7'. The Namibian Cancer Registry was assisted in the compilation of their latest report. The Johannesburg cancer case-control study (see below) monitors the changing incidence of cancers in the HIV-positive population.

Research projects

Johannesburg cancer-case control study

Researchers: Dr L Stein, Ms M Urban

Collaborators: Prof P Ruff, Prof M Patel, Prof B Donde, Prof M Hale (Faculty of Health Sciences, University of the Witwatersrand); Prof F Sitas (Research Division, Cancer Council New South Wales, Sydney, Australia)

The core of the CERG's research is the ongoing Johannesburg cancer case control study, which began in 1995 at Chris Hani Baragwanath Hospital. Currently, following informed consent, black patients newly diagnosed with a cancer at Johannesburg (Charlotte Maxeke) Hospital are interviewed with a standard questionnaire which collects demographic and risk factor information. Whenever possible, blood specimens are also collected. Diagnoses are confirmed by accessing laboratory records and patient files. During the reporting period, approximately 1,300 patients were added to the database, which now totals 16,500.

The case-control study can produce multiple outcomes, depending on which cancers and which variables are analysed. A major outcome of the study is the monitoring of the evolving impact of HIV, and now anti-retroviral therapy, on cancer numbers and cancer patterns, which have implications for provision of diagnosis and treatment. Analyses of risk factors for leading cancers such as breast cancer, and cervical cancer in HIV-positive women, have not yet been completed due to insufficient scientific staff. Dr F Sitas, previous CERG Director, and his team at Cancer Council New South Wales have provided significant scientific and statistical support.

The following projects use data and specimens from the case-control study:

Pepsinogen profile, *Helicobacter pylori*, and gastric cancer in a black South African population

Researchers: Dr L Stein, Ms M Urban

Collaborators: Prof P Ruff, Prof M Patel, Prof B Donde, Prof M Hale (Faculty of Health Sciences, University of the

Witwatersrand); Prof F Sitas, Dr H Mitchell (Research Division, Cancer Council New South Wales, Sydney, Australia) Infection with *Helicobacter pylori* is thought to cause about 35-65% of stomach cancers worldwide. Although infection rates in Africa are greater than 80%, stomach cancer incidence rates are lower than expected. No previous study in Africa has been of sufficient size to examine the association between *H. pylori* serotypes, IgG antibodies and pepsinogen levels and gastric cancer.

Human papillomaviruses and cancer of the oesophagus: a multi-centre collaborative analysis of serological and lifestyle information

Contributors: Dr L Stein, Ms M Urban

Cancer of the oesophagus ranks sixth in males and tenth in females, worldwide. In South Africa, it is the third most common cancer in men and sixth in women (NCR 2001 data). Previous work by the CERG indicates that a proportion of oesophageal cancers in South Africa is caused by human papillomavirus (HPV) infections. This collaboration will use specimens and data from existing case-control studies conducted in places with differing background oesophageal cancer risk. Following careful adjustment for smoking, alcohol consumption and other covariates, it will measure, in a standardised manner, the association between several HPV serological markers and oesophageal cancers. The serological results and associated questionnaire data will be analysed by the Cancer Epidemiology Research Unit of Cancer Council New South Wales, Australia. The German Cancer Research Center, Heidelberg, Germany will carry out the laboratory work. All collaborators will be involved in interpreting and writing up the results. Participating countries/regions include: South Africa, Australia, USA, China, Iran, Central Europe, Norway and South America.

International collaboration of epidemiological studies of cervical cancer

The CERG has provided data to this large international study of risk factors for cervical cancer in HIV-negative women from 50 centres. The Johannesburg study data contributed 8.2% of the total cases in the collaboration which is co-ordinated by the International Agency for Research on Cancer. Several analyses using this collaborative data have already been published. Ms Urban and Dr Stein are involved in the writing of the papers following analysis by an international team.

Risk factors for female cancers among black South African women

Researchers: W Rubanza (for MSc), AT Ali (for MSc), Dr L Stein

Collaborator: Dr F Sitas

In his 2006 analysis of 1,608 black South African women. Mr Rubanza found that the use of oral contraceptives was associated with a doubling of the risk of invasive breast cancer. On the basis of this result, in 2008 an analysis on the association of oral contraceptives with all cancers specific to females was carried out in a much larger dataset. Current use of oral contraceptives was a significant risk factor only for breast cancer and not for any other female cancers. Having fewer or no pregnancies decreased breast, cervical and endometrial cancer risk; smoking was related to an eight-fold increased risk for vulval cancer and a 2.6-fold risk for cervical cancer. The analyses are being refined and will be written up for publication. Dr Ali analysed data from 148 patients with endometrial cancer and 444 women with non-gynaecological and non-breast cancer from the Johannesburg case control study. The risk for endometrial cancer was found to be higher for older women, women who had had miscarriages and those who were older at the time of last pregnancy. No relationship was found with infertility, age at first full-term pregnancy, educational level, use of contraceptives or HIV status. Further work needs to be done to confirm these findings.

Teaching and training

CERG staff lecture on the epidemiology of cancers in the Wits graduate entry medical programme. Student projects within the MSc Epidemiology and Biostatistics, School of Public Health, are supervised. Ms Urban gave a presentation and was a resource person for the Perinatal HIV Research Unit/Johns Hopkins University Research Promotion Programme 'Cancers and HIV/AIDS: their epidemiology'.

Honours

The publication of 'The spectrum of human immunodeficiency virus-associated cancers in a South African black population: results from a case-control study, 1995-2004' in the *International Journal of Cancer* was praised by the Faculty of 1000 (Medicine): "This article illustrates that a sustained commitment and relatively simple epidemiologic study design (hospital-based case-control) can provide insight on a major cause of disease and death HIV-associated malignancy in sub-Saharan Africa".

Research output

Publications published: 5
Conference presentations:
National: 1
International: 1

Professional development

Postgraduate candidates enrolled: 4