# CANCER: KILLER NUMBER ONE

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An examination of recent statistical data reveals clearly that before the turn of the present century cancer will become—if other things remain equal—the biggest killer in the communities of the world. It has been estimated that 50,000,000 people in the United States and 4,000,000 people in the Union of South Africa, now alive, will develop cancer in their lifetime. These figures give cause for public alarm and stand as a challenge to our medical science; and if in every latitude the piercing cry is heard, 'What is being done to combat the evil in our midst?' then we would say that the answer is being constantly given by an organization which was founded in South Africa as far back as 1931 by a group of men whose names now belong to medical history, and which included Drs. M. des Ligneris, J. H. Harvey Pirie, E. B. Woolf, D. Horwich, P. J. Olivier, A. J. Orenstein and A. Mavrogordato, Sir Spenser Lister and Messrs. Hugh R. Solomon and James Pinkerton. The organization formed by these public-spirited men is known as the National Cancer Association of South Africa, and the objects for which it was established are well expressed in its ably drafted memorandum and articles of association.[1] If proof is needed of public confidence in the work of the National Cancer Association, under the presidency of Dr. Lewis S. Robertson, one has only to consider the spontaneous response of the public to appeals for funds.[2]

## ASSOCIATION'S CONTROL PROGRAMMES

The National Cancer Association of S.A. has only recently inaugurated its control programmes. They include the following:

1. *The Provision of Information to Medical Practitioners*

(*a*) *A quarterly scientific journal entitled the 'South African Cancer Bulletin'*. This Journal was initiated in 1957, and copies are circulated free of charge to registered medical practitioners. Its contents include case reports, abstracts, reviews, all of which focus attention on the diagnosis and treatment of cancer.

(*b*) *Professional films*. The NCASA, with the assistance of the American Cancer Society, has built up a national film library, consisting at present of 28 professional films. Film catalogues are circulated to interested organizations, such as Branches of the Medical Association of South Africa, hospitals and medical schools. Films are loaned free of charge under prescribed conditions.

(*c*) *Assistance to medical libraries*. The NCASA provides the libraries of medical schools with publications relating to cancer which, owing to lack of funds, they are unable to purchase.

(*d*) *Grants for post graduate study and research*. The NCASA has made it financially possible for research workers at our medical schools and the South African Institute for Medical Research to conduct investigations into the causation, prevention and treatment of cancer. During the 1958 research grants amounting to a total of £35,000 were made to Drs. J. C. Allan, M. B. Bennett, B. M. Bloomberg, D. Burgun, R. J. W. Burrell, M. M. Dale, G. v. d. W. de Kock, J. H. S. Gear, J. M. Grieve, J. Higginson, S. S. Mirvish, A. G. Oettlé, M. D. Prates, E. E. Rosenberg, H. M. Schwartz, and Dr. M. H. Silk, Prof. D. Crichton, Prof. A. E. Kark, and Prof. O. S. Heyns in collaboration with Dr. S. Shippel.

(*e*) *Exhibits at medical congresses*. The first exhibit was presented at the 41st South African Medical Congress, Durban 1957.

2. *The Education of the Lay Public*

(*a*) *Literature*. The NCASA, with the permission of the American Cancer Society, distributed 200,000 copies each of pamphlets entitled, 'How your doctor detects cancer', and 'Breast cancer' to the personnel of insurance companies, banks, building societies, chambers of commerce and industry, mines, the S.A. Railways, the S.A. Police and all Departments of the Public Service.

(*b*) *Educational films*, purchased by NCASA from the American Cancer Society, are loaned for exhibition to many organizations in the Union.

(*c*) *A mobile cinematographic unit* visits every town in the country, presenting a programme consisting of (i) a cancer exhibition, (ii) a talk on the activities of the Association; (iii) a general talk on cancer; (iv) a film show for the general public; and (v) a medical lecture and a film on 'Breast self-examination'.

(*d*) *Exhibitions and shows to combat the undesirable practices of cancer quacks* are held annually at agricultural and industrial shows.

3. *The Care of the Cancer Patient*

One of the objectives of the NCASA is the establishment of services aimed at alleviating the suffering of cancer patients, provided that these services are supplementary to, or fall outside the scope of, local or government authorities. In addition, the Association undertakes to act as agent for the cancer sufferer in helping him to get from the authorities such relief as he is legally entitled to but perhaps, through ignorance or incompetence, is unable to claim. In the furtherance of this work other organizations are rallying to the Association's aid. Thus (i) the South African Red Cross Society provides domiciliary aides for stricken cancer families, the aides being paid for their services by the Association; (ii) The St. John Ambulance Association provides

an ambulance to transport cancer patients to and from hospitals for treatment; and (iii) the Noodhulpliga renders in certain rural areas all the services provided in the cities by the Red Cross and St. John's.[3]

### LECTURE BY PROF. EMERSON DAY

Prof. Emerson Day, the Director of the Strang Cancer Prevention Clinic Memorial Centre, New York, and Professor of Preventive Medicine, Sloan-Kettering Division, Cornell University Medical College, was recently invited to the Union by the *South African Practitioner* to engage in an *ad hoc* lecture tour. Professor Day gave a number of valuable and well attended lectures to medical practitioners throughout the Union on the pioneer work which is being done at the Strang Cancer Prevention Clinic on the early detection, diagnosis and management of cancer. Professor Day said the control of the cancer problem called for the application of many medical disciplines, but certain practical measures were necessary at the purely medical level. The plan followed at the Strang Clinic is directed to the attainment of 3 fundamental objectives, viz.:

(1) to identify, detect, and remove pre-malignant lesions,
(2) to diagnose cancer in the earliest possible stage, and
(3) to apply to patients the most advanced methods of treatment in the way of surgery, radiotherapy, or chemotherapy.

The routine cancer detection examination which is performed at the Memorial Centre is conducted under the following heads:

1. *History* of condition, with reference to (*a*) systematic history, (*b*) history of cancer in family, (*c*) history of environmental exposure, (*d*) history of pregnancy, etc.

2. *Physical examination* of the entire body with reference to (*a*) Skin and node-bearing areas, (*b*) nasal and oral cavity, (*c*) pharynx and vocal cords, (*d*) thyroid, breasts, lungs, abdomen, male genitalia (especially prostrate), (*e*) female genitalia (vagina, cervix, uterus, and adnexa), and (*f*) rectum.

3. *Laboratory investigations*, including total blood count, complete urinalysis, cytological examination of vaginal and cervical smears, examination of stools for occult blood, and tissue biopsy.

4. *Radiographic examination*, e.g. of chest, skull, bones, and gastro-intestinal tract, as and when indicated.

The performance of the routine cancer detection examination calls for, *inter alia*, a knowledge of the technique of indirect laryngoscopy and proctosigmoidoscopy, and for competence in the examination of vaginal and cervical smears, etc. The examination as outlined herein will bring a maximum number of cancer patients with minimal signs and symptoms to the attention of the surgeon or radiotherapist, as the case may be.

The physician performing the routine cancer detection examination must pay careful attention to those anatomical sites where cancer is common and which, because of their accessibility to inspection and palpation, permit of early detection of cancer. The examination of sites which are so accessible are dealt with in the following order:

1. *Breast*

(*a*) *Inspection.* The patient is examined in a good light and seated in the upright position, first with her arms at her sides, then with her hands on her hips, and finally with her arms raised above her head. Careful inspection may enable the examiner to detect one or other of the following significant changes, viz.: (i) asymmetry between the breasts, (ii) minimal degrees of skin change, (iii) nipple retraction or scaling, or (iv) nipple discharge.

(*b*) *Palpation.* The breast is palpated first with the patient's arms relaxed at the side, and then with arms raised. Any positive findings are then checked by further palpation with the patient in the recumbent position, and at the same time both axillae are examined while the examiner supports the patient's elbow with his hand. The patient is next placed in the supine position and all the quadrants of the breast are carefully palpated with the tips of the fingers.

(*c*) *Cytological examination of nipple discharge.* A smear should be made of any discharge from the nipple, whether sanguineous or not, and cytologically examined, since cancerous cells may be present in the absence of a palpable mass.

2. *Uterus*

(*a*) *Palpation per vaginam* of uterus and adnexa.

(*b*) *Visualization* of the cervix and vagina with a speculum. A careful note is taken of the presence of the following signs which are suggestive of early malignancy, viz.: (i) vaginal bleeding or spotting, (ii) menorrhagia, (iii) cervical erosion, (iv) contact bleeding, and (v) failure to respond to the Schiller iodine test.

(*c*) *Cytological examination*, by means of the Papanicolaou technique, of (i) vaginal smear, (ii) cervical smear, and (iii) endometrial smear. (The glass slides are immediately fixed in a solution of equal parts of 95% alcohol and ether.)

(*d*) *Biopsy examination* of any suspicious area visualized by ordinary inspection, or any localized area of the cervix which fails to take the iodine stain in uniform fashion.

3. *Rectum and Colon*

(*a*) *Digital palpation of the rectum*, noting the occult blood on the examining finger which signalizes the presence of cancer of the rectum and colon or elsewhere in the bowel.

(*b*) *Proctosigmoidoscopy*, which should form an integral part of every cancer detection investigation in every person over the age of 40. The presence of polyps, which is a pre-cancerous condition, should always be looked for.

(*c*) *Examination of stool for occult blood* (following a 3-day meat-free diet).

(*d*) *Barium enema* with air contrast (in all polyp cases).

(*e*) *Biopsy* of all polyps encountered.

4. *Stomach*

(*a*) *Radiographic examination* of the upper gastro-intestinal tract. Photofluorographic survey films of the barium-filled stomach are taken to screen all stomach cancer suspects for more elaborate diagnostic study. A formal gastro-intestinal series may be recommended on the basis of abnormalities encountered on survey photofluorographic views. This technique narrows the number of patients requiring gastro-intestinal series to approximately 2% of the total seen.

(*b*) *Estimation of gastric acidity* is important because patients with achlorhydria or hypochlorhydria are more liable to gastric cancer than others, and where either is present a periodic radiological examination of the gastro-intestinal tract is made. Gastric analysis is carried out after the method of Segal ('tubeless gastric analysis'), which utilizes certain properties of ion-exchange resins and their reaction with gastric contents. This determination of gastric acidity is found to increase the chance of gastric lesions being picked up by gastro-intestinal radiography.

(*c*) *Gastroscopy.* Patients with atrophic gastritis, gastric polyps or gastric ulcers are advised to undergo periodic radiological examination of the gastro-intestinal tract.

(*d*) *Cytological examination of the gastric contents.*

(*e*) *Examination of the blood.* Patients with pernicious anaemia run a much higher risk of gastric cancer than the average population. Approximately 10% of such patients develop gastric cancer.

5. *Lungs*

(*a*) *Radiographic examination of the chest* is especially indicated in patients over the age of 45 with a history of long-term heavy cigarette smoking or certain occupational exposures. When a single postero-anterior film suggests the presence of a pulmonary tumour it is necessary to take further films at intervals.

(*b*) *Cytological examination of sputum, and of tracheal and bronchial washings*, makes it possible to arrive at a positive morphological diagnosis in 50-90% of cases. Sputum for cytological study is expectorated by the patient directly into a bottle containing 70% alcohol. The specimen must be the product of a deep cough and as free as possible from admixed saliva. At least 3 sputum specimens should be cytologically examined before being passed as negative.

(*c*) *Bronchoscopy* is the most definitive diagnostic procedure in lung cancer. Nevertheless, lung cancer can be visualized bronchoscopically in about one-third of cases. Bronchial washings obtained by bronchoscopy may establish a diagnosis without actual bronchoscopic visualization.

(*d*) *Thoracotomy.* The diagnosis of lung cancer can be arrived at only by operation in about 20% of cases.

6. *Skin*

The examiner should look for lesions suggestive of epidermoid or basal carcinoma of the skin, particularly in the head and neck, and also for pigmented naevi. All these lesions, which are potentially malignant, are subjected to biopsy. Special attention is given to the presence of junctional naevi, usually located on the soles

of the feet, palms of the hands, the region of the external genitalia, and areas subjected to chronic irritation such as those around the belt, collar, brassière, etc.

7. *Thyroid Gland*

The thyroid should be palpated for the presence of single or multiple nodules.

8. *Oral Cavity*

The mucosa of the oral cavity is inspected for the presence of leukoplakia. Biopsies should be taken from an affected area.

9. *Blood*

Blood examination is essential for the detection or diagnosis of malignant lymphomas and leukaemias.

10. *Peripheral Lymph Nodes*

Enlargement may be suggestive of Hodgkin's disease, lymphosarcoma, etc.

11. *Prostate*

Digital palpation of prostate is the only rewarding detection technique in carcinoma of the prostate. The presence of a firm, solitary nodule in a man aged 50 or over is considered as carcinoma until proved otherwise.

12. *Urine*

Routine urinalysis is done in the hope of finding gross or microscopic haematuria.

13. *Oesophagus*

An oesophagram, supplemented by cytology as well as oesophagoscopy, is resorted to.

14. *Pancreas*

The detection or diagnosis of carcinoma of the pancreas can only be adequately achieved by exploratory laparotomy. [4]

## CONCLUSION

The examination routine followed by Emerson Day and his associates at the Strang Clinic has made possible the detection of cancer in its early stages in many thousands of people who would otherwise have come too late for therapy. In paying tribute to the Strang Clinic, one cannot refrain from expressing the hope that a similar institute will be established in the Union of South Africa. Our need is great. We have the requisite organizational machinery in the form of the National Cancer Association of South Africa, and we have the necessary personnel splendidly trained by our five medical schools and the South African Institute for Medical Research.

## REFERENCES

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4. O'Donnel, W. E. and Day, E. (1956): Med. Clin. N. Amer., **40**, 591.