

The future cost of cancer in South Africa: An interdisciplinary cost management strategy

The exponential rise in cancer costs in South Africa (SA) was illustrated in a recent *Sunday Times* article entitled 'The cost of cancer can be a debt sentence'.^[1] Our minister of health talks of a 'war' against the high costs of cancer drugs, and epidemiologists project a sharply rising incidence. Eminent international medical journals, such as *The Lancet*, underline the fact that cancer cost is a growing international problem that confronts even the richest countries. Indeed, the question may be posed: if richer countries in the world are battling to cover the costs of cancer, what is the prognosis for SA?

The future incidence of cancer

Epidemiologists predict a major increase in cancer in the developing world, with 60% of all new cases coming from Africa, Asia and South/Central America.^[2] In SA the projected increase is even greater, and a recent article in *The Lancet*^[3] projected a 78% increase by 2030. Rapidly changing lifestyles, uncontrolled urbanisation, pollution, population ageing, endemic viral infection (HBV/HIV/HPV) and an epidemic of obesity provide a lethal cocktail of infectious and lifestyle cancer risk factors in SA.^[4,5]

International trends in cancer cost

The cost of healthcare is a growing international problem. In the USA ~62% of all personal bankruptcies (2007) were caused by healthcare costs.^[2] The cost of cancer management has 'skyrocketed', as illustrated in the European Union, which recorded a cost (in SA terms) of more than ZAR2 500 billion in 2009 that included direct healthcare costs, lost productivity and loss of family savings.^[6] It appears that the doctrine of *justum pretium* ('a fair price') has been ignored by the pharmaceutical sector. Of the 12 drugs approved by the Food and Drug Administration in the USA for various cancer indications in 2012, 11 were priced above ZAR1.5 million per patient per year.^[7] At the 2015 American Society of Clinical Oncology annual meeting, Dr Leonard Saltz wryly commented that ipilimumab (immune checkpoint inhibitor) was almost '4 000 times the cost of gold'.

SA cancer cost squeeze

Cancer management programmes in SA are threatened by a cost squeeze caused by a constrained gross domestic product in the face of a simultaneous increase in incidence and cost. Just recently, the Sandton Oncology Centre complained that, although the cost of cancer drugs was high, they often only make up a fraction of the total cost. Costs such as surgery, inpatient care, consultations and repetitive diagnostic and staging investigations have ratcheted up expenses exponentially. Because of these costs, medical aid limits are increasingly unable to cover even older-generation therapies, let alone more targeted interventions. The provision of new-generation immunotherapy drugs such as ipilimumab has a price tag of ZAR1 million, and trastuzumab costs ZAR25 000 per treatment. A mastectomy plus trastuzumab costs ZAR500 000, and immunotherapy for metastatic melanoma ~ZAR1 million.

SA private cancer healthcare

Providing healthcare cover for cancer is a high-risk business. A PricewaterhouseCoopers survey of the industry indicated escalating hospital and specialist costs, an ageing risk profile and an increase in unhealthy members. General agreement in this sector is that

innovative thinking is needed to embrace new technology combined with a preventive approach, as well as lower the cost of drugs. Without these changes, a typical medical aid cover of ZAR200 000 - 400 000 will be increasingly inadequate to cover conservative cancer management programmes, let alone newer-generation therapies.

SA public healthcare and cancer cost

The projected cost squeeze could preclude the public healthcare sector from providing even the most cost-effective treatment programmes. An example is radiotherapy, which is routinely provided to ~50% of all patients diagnosed with cancer.^[8] Currently, the public sector has <1 linear accelerator (0.4) per million people compared with the recommended minimum of at least 1 per million as per International Atomic Energy Agency (IAEA) and World Health Organization (WHO) guidelines and 3 per million as per the Econex report.^[9] Significant shortfalls are even more pronounced in the poorer provinces, explaining the current delays for patients accessing radiotherapy. In addition, 25% of the country's oncologists are required to service more than 75% of the population, contributing to a general shortage of oncology healthcare staff in the public healthcare sector, including medical physicists, radiotherapists, oncologists and trained nurses. A combination of long treatment delays, limited resources, differentially skilled personnel, high patient volumes and advanced disease stage on presentation makes for a challenging environment to deliver optimal cancer care outcomes.^[10,11] What will happen if the incidence of cancer increases by 78%?

A strategic rethink

Interdisciplinary planning is necessary to commercialise new diagnostic, surgical, radiotherapy and pharmaceutical technologies that can diagnose and treat cancer at an early stage. At the same time, efficient and cost-effective treatment can leverage the maximum out of the current resources. Public-private partnerships must also be explored to take advantage of better infrastructural capacity in the private sector, and a national strategic cancer control plan should be developed by all stakeholders to ensure the development of legislative (e.g. alcohol, sugar, smoking), educational (e.g. smoking, diet, exercise) and prophylactic (e.g. HBV/HPV vaccination) programmes. The development of better databases, and training of and incentives for oncology personnel, should be a national priority from primary to specialist level.^[8] The retention of oncologists in the public sector institutions could also be prioritised and include compulsory service for newly qualified specialists, tagged with incentives to stay in the public sector. In addition, oncology exposure at undergraduate level needs to be improved so that primary care physicians are better equipped to make an early diagnosis of cancer.

The cost benefit of national screening programmes for common malignancies can also be explored beyond cervical cancer and a standardised treatment plan for pre-malignant lesions developed. A public sector capital investment in radiotherapy infrastructure such as simulators, linear accelerators and brachytherapy units in accordance with WHO and IAEA guidelines, together with necessary maintenance contracts, will obviate delays in patients accessing radiotherapy in the curative and palliative context. Palliative care facilities and trained personnel also need to be urgently developed to manage terminally ill cancer patients.

Interdisciplinary research funding in SA needs to be encouraged in order to better understand the demographic and molecular aetiology of cancer in the country. Emerging opportunities supported by the National Research Foundation and the Medical Research Council are increasingly encouraging collaborative research in the BRICS countries (Brazil, Russia, India, China and South Africa) or developed/developing country research partnerships.

The cost of cancer drugs is multi-tiered. At present, they are more expensive in developed countries such as the USA and differentially discounted in developing countries. Nevertheless, the discounted price of new-generation cancer drugs is still unaffordable in developing countries and especially in sub-Saharan Africa.^[12] The reduction of these costs is an international issue that must precipitate government and NGO lobbies in international forums to allow SA to adopt a patent bypass approach (as in India), or alternatively to reduce differential pricing even further. In parallel, there is a need to keep looking at making more efficient use of budget allocations for drugs, with many oncologists continuing to prescribe two to three lines of chemotherapy in very advanced stages, and requesting repeated costly investigations because of the fear of litigation.

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