



## Summary

The request to carry out a second [imPACT Review](#) in Senegal which was received by the International Atomic Energy Agency (IAEA) on December 30, 2019, is part of the efforts made by the Government of Senegal towards setting up an effective national cancer management system by addressing the capacity needs in the 14 medical regions of the country.

According to the International Agency for Research on Cancer (IARC) GLOBOCAN<sup>1</sup> estimates, 11 317 new cancer cases and 7 893 cancers related deaths occurred in Senegal in 2020. The most common cancers among women are cervix, breast, and liver. In men, the most common cancers are prostate, liver and stomach. In paediatric oncology the most frequent cancers are kidney, Non-Hodgkin lymphoma and leukaemia. It is estimated that by 2030, cancer incidence and mortality will increase more than 40%.<sup>2</sup> In the absence of available cancer registry data, the estimates provided by IARC are the main reference to analyse the incidence and mortality of the most frequent cancers in Senegal.

The specific objectives of the Review were:

- Assess national capacities and needs in cancer control planning, cancer registration, prevention, early detection, diagnosis and treatment and palliative care.
- Gain an overview of national regulatory infrastructure for the safety of radiation sources, and security of radioactive material in medical uses.
- Inform the development, costing and budgeting of the national cancer control programme (NCCP) through the conclusions and recommendations of the imPACT review report.
- Contribute to the development of an oncology workforce capacity building plan, including the scale up of diagnosis, treatment, and palliative care services.
- Identify opportunities for mobilizing the required strategic partners and resources for the implementation of the national cancer control strategy.
- Provide an overview of all cancer-relevant programmatic support and advisory services that can be provided by the IAEA, IARC and WHO.
- This imPACT Review also aims to provide a specific focused analysis for cervical cancer and paediatric cancers.

1 The online GLOBOCAN 2020 database, accessible at <https://gco.iarc.fr/>, is part of the IARC Global Cancer Observatory.

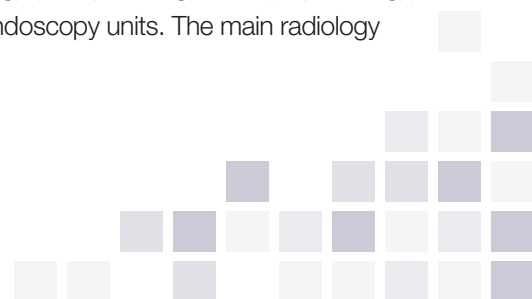
2 GLOBOCAN 2020. Cancer's incidence in 2030 is estimated to increase by 40.5% (15 906 new cases), and cancer's mortality is estimated to increase by 41.3% (11 155 deaths).



# Main findings

1. Cancer management in Senegal is assured by the Directorate for the Fight Against Diseases, through the Division for the Control of Non-Communicable Diseases (DLMNT), which is responsible for organizing the surveillance, prevention and management of all the non-communicable diseases, including cancer. At the decentralized level, the medical regions ensure cancer control coordination as part of the general public health activities. The MoH collaborates with the civil society sector (LISCA, LISTAB, Women's Associations) involved mainly in cancer prevention and screening.
2. Senegal had a National Cancer Control Plan (NCCP) valid for the period 2015-2019. The process of developing the plan, carried out by a committee led by the Department of Non-Communicable Diseases (DLMNT) within the Ministry of Health and Social Action (MoH), involved, among others, university hospitals, civil society, and the WHO. A Steering Committee has been established to monitor the implementation of the NCCP; however, this has not been formalized and meetings are not regularly held. Although the plan has been costed, there is no resource mobilization plan drafted to support its implementation.
3. A Population-Based Cancer Registry (PBCR), the Senegalese Tumour Registry, was established in 2013 in the Dakar region, covering 22.9% of the total population. Due to both technology and budget reasons, the registry has not been operational since 2015.
4. Cervical cancer has the highest incidence and mortality in the country. A national HPV vaccination project was launched in October 2018, introducing the vaccine in the Expanded Immunization Program. However, due to the limited number of doses of HPV vaccine available, only 9-year-old girls have been vaccinated so far.
5. Cervical cancer screening is one of the strategic objectives of the NCCP 2015-2019. While a national screening programme has not been yet designed, several pilot programmes are being implemented by the MoH and civil society. To date, screening is opportunistic and has been mainly done on a voluntary basis. Campaigns for opportunistic screening are organized by Non-Governmental Organizations (NGO) such as the Senegalese League Against Cancer (Ligue Sénégalaise Contre le Cancer - LISCA).
6. Senegal is an area of high prevalence for Hepatitis B Virus (HBV). Thanks to the introduction of the HBV vaccination in the Expanded Immunization Program and the universal vaccination of new-borns practiced since 1999 within the framework of the National Hepatitis Control Program, the overall seroprevalence of the HBV surface antigen (HBsAg) decreased from 17% to 9.5% between 1999 and 2017. Vaccination coverage reaches almost 90%.
7. In 2015, 6% of adults in Senegal use tobacco products, with a higher prevalence in men (11%) than in women (1.2%). Senegal has ratified the Framework Convention on Tobacco Control (FCTC) in 2005. However, most of the regulations and measures adopted are not sufficiently enforced, and the resources allocated are limited.
8. In terms of cancer diagnosis, the majority of cancer patients are diagnosed at advanced stage of the disease. Most of the health care facilities providing diagnostic services are located in Dakar. All the main cancer facilities<sup>3</sup> assessed feature the key diagnostic services: pathology (histopathology and cytopathology), biology/biochemistry laboratories, radiology unit or department and endoscopy units. The main radiology

<sup>3</sup> Le Dantec, HOGIP, Principal, Fann, Dalal Jamm, Thiès



departments perform conventional radiology, X ray and ultrasound and have CT scanner and MRI. There are 12 anatomic-pathology laboratories (7 in public sector and 5 in private sector) do not fully operate due to a lack of equipment and supplies. There is only one nuclear medicine department, located at HOGIP hospital equipped with a SPECT gamma camera.

9. The most commonly treated cancers with radiotherapy are cervical, breast, oesophagus, prostate, rectum and hypopharyngeal cancers. Three radiotherapy departments are in place and all are located in Dakar including two in the public sector and one in the private sector. Cancer surgery exists in the private sector and in all the major hospitals in Dakar, although there are very few specialist surgeons and general surgeons most often perform surgery for breast and gynaecological cancers. Since October 2019 first line medical treatment (chemotherapy, antiemetic, anti-allergic and palliative treatments) for breast cancers and cervical cancers are free, while the first line medical treatments are supported by the Government up to 60% of their cost. Radiotherapy and surgery are subsidized at 150 000 XOF (US \$ 280) and 60 000 XOF (US \$ 110) by the Senegalese State.
10. Paediatric cancer is treated only at the Le Dantec hospital and most of the paediatric cancer cases are diagnosed at an advanced stage. At the hospital, only 26 beds are available and there is no day hospital. There is a significant gap between the new cases reported annually (about 200 cases reported) and the IARC's proposed estimates for the year 2020 (almost 500 cases estimated), which could suggest a considerable under-diagnosis of the childhood cancer burden in Senegal. Moreover, once cancer is detected, there is no formal referral system and the limited funding for paediatric cancer, as well as the lack of medical and nursing staff trained in paediatric oncology, causes a delay in consultations and diagnosis and a high dropout rate.
11. During the COVID-19 pandemic, the number of patients undergoing chemotherapy and radiotherapy did not diminished. The main issue is related to the reduced logistical capacity for the supply of drugs and consumables for diagnosis and therapy, as well as the reduced economic capacity of patients to purchase treatment.
12. The government has established a legal framework for safety and control of radiation sources. The current nuclear law has been revised, and a new comprehensive nuclear law is in the process of approval. The safety principles for protecting people (both for worker and patient) and the environment from radiation risks are set out in the existing legal framework. Law 2009-14 provides for the establishment of the independent regulatory body (Radiation Protection and Nuclear Safety Authority - ARSN) responsible for inspections.
13. With the available data on incidence and cancer stage, it is estimated that there are more than 75 000 cancer patients in need of palliative care. In Senegal, palliative care is part of the NCCP 2015 - 2019 and the National Drug Control Agency has been involved in planning palliative care activities; however national guidelines and standards for the provision of palliative care services have not been developed to date. Palliative care services are provided mainly in Dakar by the public and private sectors, and include inpatient and outpatient care, as well as home-based care. Currently, access to morphine is limited despite the high levels of moderate to severe pain reported, and oral morphine for paediatric patients is not available.
14. Senegal has a substantial infrastructure for university and post-graduate training, there are several medical schools, the most important of which are the universities of Dakar, Thiès, Saint-Louis, Ziguinchor et Bambey. The number of trained physicians is significant but remains insufficient in view of Senegal's increasing health needs. There are specialized training programs in 16 specialties, including surgical oncology, radiotherapy, nuclear medicine, anatomic pathology and medical imaging.



# Summary of recommendations

## Cancer Control Planning

- In 2021 initiate a nationwide consultative process with all relevant stakeholders to: Assess and evaluate the results of the NCCP 2015-2019; Determine cancer control priorities for 2021; Draft the new NCCP 2022-2026.
- Ensure that the NCCP 2022-2026, is aligned with the National Health Sector Development Programme (NHSDP 2019-2028) priorities and strategies and it is consistent and complementary to the maternal and child health as well as the national HIV-AIDS strategies.
- Strengthen the existing Cancer Control Steering Committee to ensure better coordination of the national and regional authorities over planning, budgeting, implementation, monitoring and evaluation of the NCCP, by: Increasing human resource capacities in the MoH (appoint at least three full-time staff dedicated on cancer control, with public health and project management background); Improving MoH capacity in planning, budgeting, implementing and monitoring the NCCP (e.g. developing adapted IT management tool); Ensuring better coordination among cancer-relevant Directorates in the MoH, as well as among decentralised health administration, for both planning and implementation of the NCCP.

## Cancer Registry and Surveillance

- Restore the population-based Senegal Cancer Registry targeting the Dakar region (to be scaled up in the medium and long term), locate it within the DLMNT at the MoH, and provide it with the premises and human resources as follows: Nominate 1 manager and 3 registrars to work full time for the Registry (preferably paramedical civil servants to pre-empt salary payment issues); Assign dedicated staff for cancer registration within hospitals, depending on the size and capacity of the hospital.
- Adopt, in full collaboration with the African Cancer registry Network (AFORN) and IARC, the CanReg5 software to resume data collection.
- Ensure the sustainability of the Registry by linking it to the National Health Information and Management System, and by opening a budget line at the DLMNT to procure equipment and guarantee the necessary workforce to ensure the Registry services (data collection and analysis, coordination of registry network, etc.).

## Cancer Prevention

- Ensure HPV vaccination coverage is increased for the second dose, as well as expanded to the entire target group, adolescent girls aged 9 to 13, ensuring adequate and continuous supply of vaccines.
- Ensure HBV vaccination coverage reaches at least 95% of births at the national level and at least 85% coverage in each district. Further, strengthen routine immunization services to achieve and sustain at least 95% coverage with three doses of Hepatitis B vaccine by 1 year of age at the national level, and at least 85% coverage in each district.
- Identify centres at the national and regional levels that are empowered to conduct awareness campaigns for prevention and early diagnosis (EIC interventions), and increase availability of information, education and communication materials among general practitioners and rural doctors (e.g. create and distribute practice guideline documents, posters on early warning signs, education materials to support the civil society organizations etc).

## Early Detection

- Strengthen the monitoring of the implementation of specific standards and protocols for early detection of main cancers including childhood cancers and align them with the most recent guidelines issued by WHO.
- Strengthen the early detection system of cervical cancers by: Aligning existing cervical screening protocol with WHO guidelines for screening and treatment of precancerous lesions; Regular training of midwives and caregivers on VIA screening method, precancerous lesions treatment and HPV testing.



- Strengthen the early diagnosis system of breast cancers by: Establishing regular trainings of health providers on breast cancer early diagnosis services, including trainings on clinical breast examination, follow up diagnosis with image-guided biopsy, ultrasound and mammography; Allocating adequate resources (both financial and workforce) to ensure quality control over ongoing early detection programmes and the availability and maintenance of medical equipment for triage, diagnosis, and treatment.
- Strengthen the capacity for early diagnosis of paediatric cancers: Ensure training of health practitioners on the early signs of the main paediatric cancers; Increase visibility of paediatric oncology services among general practitioners and health personnel in urban and rural areas.

### **Cancer Diagnosis: Radiology and Nuclear Medicine**

- Increase the number and competence of available human resources in cancer diagnosis departments: Conduct a needs assessment in terms of specialists, nurses and technicians required; Assign radiologists and anatomic pathologists to the Thiès and Saint Louis Regional hospitals; Increase the capacity of human resources available by recruitment of medical and paramedical teams working in the area of diagnosis at Le Dantec, Principal, HOGIP, Dallal Jam and Fann hospitals.
- Strengthen the workforce, infrastructure and equipment capacity of the pathology departments at Dalal Jamm, HOGIP, Fann and Principal hospitals and Thiès and Saint Louis Regional hospitals.

### **Cancer Treatment: Medical Oncology, Radiotherapy and Surgical Oncology**

- Expand the list of Essential Drugs and Products free of charge (including for children) by referring to the WHO/GICC list and ensure continuous availability of essential medicines to pharmacies.
- Strengthen existing radiotherapy departments by: Sensitizing stakeholder on the important role of radiotherapy in curative and palliative cancer treatment; Strengthening specialized workforce (radiotherapy, medical physics and radiology technicians)
- Strengthen availability and accessibility of surgery and chemotherapy services fostering the extension of existing services and completing the opening of the new department of Dalal Jamm hospital in Dakar.
- Establish an effective maintenance system of the equipment and infrastructure by ensuring stable power supply source to all major health facilities and by training in-house staff in repair and troubleshooting.

### **Paediatric Oncology**

- Ensure access to radiotherapy for child cancer patients, with sedation as required.
- Adopt clinical protocols to be developed as part of the WHO Global Initiative against Childhood Cancer (GICC), including protocols for monitoring long term complications.
- Develop a national training programme on paediatric oncology to train other physicians and nurses, as well as an in-service training programme for existing staff members.

### **COVID-19 imPACT**

- Deliver to all cancer patients their prescribed treatment in compliance with a priority schedule: Prioritize the management (hospital-based if necessary) of cancer patients are required; Ensure a smooth communication flow with every individual patient to inform them about their case and monitor them; Prefer oral treatments, home-based treatments to minimize hospital visits; Establish specific guidelines to optimize the use of medications and ensure collaboration among hospitals for dispatching unused medicines and reagents.
- Ensure that oncology and radiotherapy departments do not host infected patients to minimize the risk of contamination of immune-depressed cancer patients.
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### **Radiation Safety**

- The ARSN should provide the budget and equipment necessary to acquire sufficient material for regulatory audits; develop practice-specific application authorization guides; assess its human resource needs with the goal of employing competent staff to manage all current and future regulatory activities.



## Palliative Care

- It is recommended to strengthen the provision of palliative care, foster coordination and cooperation with civil society, and make injectable and oral morphine available in hospital and private pharmacies, as well as the regional level.

## Radiation Safety

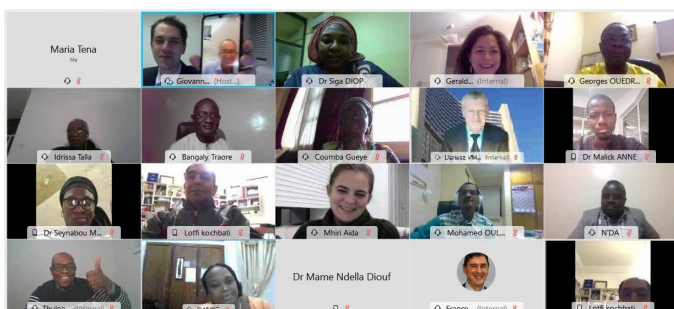
- Mobilize the required technical and financial resources for developing and establishing a sustainable, in-service training system at the country level for existing specialties (oncological surgery, paediatric surgery, radiotherapy, nuclear medicine, anatomy and cytopathology, and medical imaging) and initiate training in the following specialties: Medical Physics and Biochemistry; Medical and Paediatric Oncology; Paediatric oncological Surgery; Radiation oncology and radiology; Palliative and Psycho-oncological care.
- Standardize paramedical training for nurses and technicians by improving the theoretical and practical contents and establish mandatory in-service training by introducing the following disciplines: Cervical cancer screening by Visual Inspection with Acetic acid and the HPV-DNA test; Medical Oncology and Medical Physics; Paediatric Oncology (for nurses, anatomic-pathologists, and radiologists' technicians); Palliative Care.





## Forecasted follow-up actions for 2021 and 2021

- To support the Senegal Government in developing a new National Cancer Control Plan in close cooperation with the WHO regional and country office and the IARC.
- To strengthen the technical cooperation between the MoH and the IAEA to foster the implementation of imPACT Recommendations on cancer diagnosis and treatment. Especially the implementation of the 2022-2023 project for “strengthening the quality and Management of Radiotherapy and Nuclear Medicine Services for Cancer in Senegal.
- To organise a Follow-up meeting in 2022 to take stock on the progress realized by the MoPH in the implementation of the imPACT Review reconditions as well as to inform and orient the technical cooperation activities between the Senegal MoH, the IAEA, the WHO and the IARC.



IAEA staff, international experts and the National Focal Team appointed by the MoH to coordinate the imPACT Review, and the WHO country and Regional Office, debriefing the Ministry of Health of Senegal on the main findings and recommendations of the imPACT Review (Photo: M. Tena/ IAEA)

## IAEA-WHO-IARC joint activities on cancer control

In March 2009, WHO and IAEA signed arrangements at the Director-General level to implement a [Joint Programme on Cancer Control](#). The main purpose of this arrangement is to coordinate activities and resources to provide evidence-based and sustainable support to comprehensive cancer control programmes, particularly in low- and middle- income countries.

In response to a Government request, an [imPACT Review](#) is carried out as a comprehensive assessment of national cancer control capacities and needs. It is a partnership effort between the International Atomic Energy Agency (IAEA), the International Agency for Research on Cancer (IARC) and the World Health Organization (WHO). Where relevant, other partners are involved, such as the Union for International Cancer Control (UICC) and the United Nations Office on Drugs and Crime (UNODC). The IAEA Division of [Programme of Action for Cancer Therapy \(PACT\)](#) is responsible for coordinating the imPACT Reviews and for mobilizing the resources for their implementation.

**Link to imPACT Review news and related resources:**



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