

■ Summary

Following a request received from the Ministry of Health (MoH) of the Syrian Arab Republic on 23 June 2021, an **imPACT Review** was conducted by the **Programme of Action for Cancer Therapy (PACT)** of the International Atomic Energy Agency (IAEA), the World Health Organization (WHO) and the International Agency for Research on Cancer (IARC).

The imPACT Review was organized within the framework of the **WHO-IAEA Joint Programme on Cancer Control** to assess Syria's cancer prevention and control system and provide recommendations to the Government to:

- Strengthen national capacities in cancer control;
- Support the development of a National Cancer Control Programme (NCCP) and related policies, strategies and plans and strengthen the cancer surveillance system; and
- Support relevant resource mobilization efforts.

A team of international experts, nominated by the IAEA, WHO and IARC, held technical discussions with key stakeholders in the areas of cancer control, including cancer facilities throughout the country.

■ Main findings

- 1. National cancer control planning, governance and financing:** The Syrian National Cancer Control Committee (NCCC) was created in June 2019 and is composed of Chairperson and six members, representing key cancer control stakeholders (Ministries of Health, Higher Education and Scientific Research, Defence, the Atomic Energy Commission of Syria and representative of the Civil Society). In line with the NCCC mission of “supervising the development and revision of [the] national cancer control plan (NCCP),” it intends to develop a robust and evidence based NCCP and its Action Plan.
- 2. Registration and surveillance:** The Syrian National Cancer Registry (SNCR) was established in 2001 to determine the cancer burden, however statistical data are not available and recent data are collected only from public hospital-based cancer registries (17 514 new cancer cases in 2020).



3. **Prevention: Tobacco use** is the leading preventable cause of death worldwide and a significant risk factor in Syria. In terms of **alcohol control**, there is no available data on consumption and activities being implemented at the national level. According to a 2006 study conducted in Aleppo, the prevalence of **obesity** is at 38.2%. **Physical inactivity** among youth is reported to be at 84.9%, yet it is not integrated in non-communicable diseases (NCDs) prevention programmes at primary health care level.
4. **Early detection:** Late presentation and advanced stages at the time of diagnosis is common, especially for breast and colorectal cancers in Syria. In 2022 the NCCC developed new guidelines for breast cancer early detection based on the European Society for Medical Oncology (ESMO) clinical practice guidelines, however, the public mammography capacity is limited.
5. **Diagnosis: Pathology** services/capacities in Syria are expanding and integrating advanced techniques, albeit with limited human resources. There are 45 pathology labs within public hospital facilities, most providing basic histopathology services and very few with molecular pathology capacity. There are approximately 189 pathologists nationwide, in the public and private sectors combined. The major challenges to **diagnostic imaging** for cancer relate to the workplace, characterized by heavy workloads, inadequate workforce, and insufficient budgetary support. The private sector does provide some services, but overall Syria faces limited medical imaging coverage. There is limited coverage and accessibility to **nuclear medicine** services, in particular for Positron Emission Tomography/Computed Tomography (PET/CT) scans, which is only available at two private facilities, both in Damascus.
6. **Treatment:** The most common cancer diagnoses in adults are breast, colon, and lung. Syria has 13 hospitals that treat cancer, including one comprehensive cancer hospital and one comprehensive cancer division within the university general hospital. There is a national list of essential cancer drugs, but shortages and non-availability persist. Available cancer medications are provided free of charge to the patient at the public hospitals. In general, radiotherapy capacity is limited. Childhood cancers constitute around 5–10% of the cancer burden in Syria. The number of new childhood cases per year is approximately 1 500, most common are haematological malignancies and brain tumours.
7. **Palliative care:** The NCCC is planning to develop a Palliative Care Strategy and Programme with technical support from external partners. Palliative care is principally provided by treating physicians, mainly oncologists; spiritual care and pain services are not available. Even when opioids are available in facilities, the Syrian Narcotics Law (1993) limits the amount of morphine in a single prescription to a maximum of 60 mg. Tramadol and oxycodone with paracetamol tablets are dispensed to outpatients when available.
8. **Radiation safety considerations:** The national policy and strategy document outlining the long-term commitment to safety has yet to be established in Syria. The legal basis for radiation safety is the Legislative Decree No. 64, enacted in 2005, although it appears not to be fully consistent with the latest IAEA Safety Standards. The steps to revising the Law have been initiated by the Atomic Energy Commission of Syria (AECS).



9. Radioactive material security considerations: In June 2006, the AECS Board designated the Radiological and Nuclear Regulatory Office (RNRO) as the regulatory organ for nuclear and radiation safety and security. The Legislative Decree No. 64 and the Prime Minister's Decree No. 134 (2007) define the requirements for issuing licenses and permits at the RNRO. The licensing system is based on the categorization of radioactive sources and complies with nuclear security regulations, requirements and law enforcement systems.

■ Key priority recommendations

National cancer control planning and governance

Development, review and implementation of a National Cancer Control Programme (NCCP)

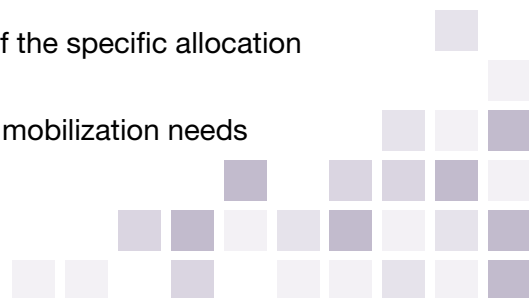
- Finalize and endorse the National Strategy for Cancer Control, in line with the WHO guidelines and recommendations.
- Develop an Action Plan, including activities for specific objectives, identifying responsibilities for implementation, timeframe, budget, sources of funding and indicators to monitor and evaluate reduction in cancer mortality as the NCCP General Objective.
- Review the priorities for cancer control in line with the following guiding principles and elements:
 - cancer burden data with robust and reliable cancer and health data;
 - equitable accessibility and affordability across the country;
 - feasible (realistic) implementation;
 - impact on reduction in mortality, increasing survival and/or quality of life of cancer patients;
 - cost-effectiveness <http://www.who.int/choice/en/>
 - scientific evidence and implementation-oriented knowledge from resource settings similar to Syria.

National cancer control coordination/governance

- Establish or complete official designation of Technical Groups (Sub-Committees) for each area of cancer control to support the NCCC.
- Ensure all the required specialties and Syrian regions are represented in the Sub-Committees.
- Facilitate participation of civil society organizations (CSOs) in the NCCC and Technical Groups, especially in the areas related to cancer advocacy, outreach and implementation support at the primary care or community levels.

Financing NCCP

- Apply WHO cancer costing tool to the NCCP Action Plan.
- Identify sources of funding in the Action Plan (regardless of the specific allocation and responsibility for implementation).
- Regularly review NCCP funding sources, identify resource mobilization needs and strategy.



Cancer registry and surveillance

- Use functional SNCR/PBCR (Population-Based Cancer Registry) outputs as a source of data for epidemiologic research/studies.
- Strengthen the MoH SNCR to collect data on all newly diagnosed cancer patients, from all health care providers (all regions) that provide cancer services (diagnostic or treatment services), as well as from mortality data.
- Make cancer reporting mandatory (policy requirement), including for the private sector. Strengthen notification of cancer cases from all data sources to the MoH SNCR.
- Enhance the hospital-based cancer registry through training on cancer registry standards, cancer registry operation, staging, quality control, data analysis and reporting.

Prevention

- Incorporate cancer messages in the existing national public information, education and communication plan on cancer prevention. For example, on the role of HPV and HBV vaccines in the prevention of cervical and liver cancers.
- Promote physical activity and healthy diet among people.
- Initiate and sustain awareness campaigns to spread information about tobacco harm.
- Advocate for WHO Framework Convention on Tobacco Control (FCTC) and MPOWER national policy implementation¹.

Early detection

- Revise the breast cancer early detection guidelines in terms of target age and diagnostic test based on scientific evidence. Clinical breast examination (CBE) to be performed by nurses/midwives in all women aged 40 to 69 years old at the primary health care (PHC) level and refer all women with abnormality to the secondary level for a CBE performed by a physician, diagnosis mammography, ultrasound in case of dense breast and Fine Needle Aspiration Cytology (FNAC). CBE at the PHC should be provided annually.
- Increase diagnostic capacity in mammography services and in histology and immunohistochemistry (IHC) laboratories.
- Increase and ensure adequate colonoscopy capacity in terms of staff and equipment according to WHO recommendations.
- Link early detection facilities to diagnostic and treatment facilities, with an effective referral system that tracks test positive persons and ensures proper patient management.
- Increase awareness of the general population and health care providers on the signs and symptoms of the common cancers (breast, colorectal, cervical and prostate).
- New NCCC guidance for early detection of cervical and prostate cancer.

¹ The MPOWER measures were introduced by WHO to help make the WHO-FCTC a reality. MPOWER measures: (Monitoring tobacco use; Protecting people from tobacco smoke; Quitting tobacco; Warning about the dangers of tobacco; Enforcing tobacco advertising, promotion & sponsorship bans; Raising taxes on tobacco)



Diagnosis (pathology and laboratory services)

- Implement standard pathology reporting format (e.g., College of American Pathology format is a useful resource for guide development). Start an electronic archiving and reporting system for histopathology and cytology samples.
- Organize short-term courses in molecular pathology/genetics.
- Ensure uninterrupted supply of diagnostic reagents and develop contingency plans in case of shortages.
- Ensure laboratories have adequate space, ventilation, electricity and water supply, internet access, equipment, supplies and waste disposal. Appoint a safety officer at each laboratory.
- Institutionalize Continuous Medical Education (CME) programmes and provide training in specialized areas like childhood cancer (mandatory). Consider expanding telepathology and strengthening multidisciplinary tumour boards via video conferencing to support professional development, encourage communities of practice and strengthen cancer care.

Diagnosis (diagnostic imaging and nuclear medicine)

- Implement accredited training programmes in core biopsy procedures, paediatric imaging and breast imaging procedures.
- Include senior radiologists (for example from Al Bairouni and Aleppo Hospitals) in the NCCC technical groups, and address issues such as the replacement of Dark Room procedures to Digital Radiography to improve early detection and accurate diagnoses.
- Accelerate the procurement for breast imaging Digital Mammography and Computed Tomography for Al Bairouni Hospital, and Magnetic Resonance Imaging (MRI) for Aleppo Hospital and dedicated low dose paediatric Computed Tomography equipment for Children's Hospital.

Treatment

Medical oncology

- Map national, regional and community referral patterns and systems of patients suspected of cancer and determine time intervals from the onslaught of symptoms to diagnosis and from diagnosis to treatment. Identify delays or gaps in the referral system and develop responses.
- Develop a mechanism to ensure multidisciplinary tumour boards and/or conferences for the majority of patients diagnosed with cancer.
- Establish a mechanism to assure supply of quality oncology drugs.
- Identify a cohort of nurses who would build oncology knowledge and skills.



Radiation oncology

- Develop a national radiotherapy programme based on the national cancer burden, geographic distribution and priority needs.
- Develop national standards, regulations, and quality assurance (QA) procedures in radiation oncology.
- Train radiation oncologists, radiation therapists (RTTs) and nurses to provide quality modern radiotherapy services. Strengthen and expand the current educational, training and certification programmes for Radiation Oncologists (Ros), Medical Physicists (MPs) and RTTs.
- Introduce high dose-rate (HDR) brachytherapy equipment and human resources at the existing radiotherapy (RT) facilities.

Paediatric oncology

- Accredite BASMA supported Paediatric Oncology Unit at Al Bairouni Hospital as a specialized training and cancer treatment provider.
- Develop a career pathway for recently certified physicians and include placement in tertiary hospitals following training programme.
- Establish a paediatric patient referral system, especially between general hospitals and specialized cancer centres (to reduce delays in diagnosis and start of treatment).
- Outsource to the private laboratory while in parallel establish a public reference laboratory for sophisticated haematological investigations, e.g., flowcytometry, molecular studies and next generation sequencing.
- Conduct regular (online) case discussions (e.g., CCHE-57357 and POEM) as part of the multidisciplinary tumour board consultations.

Palliative care

- Develop a national palliative cancer care policy and programme that corresponds to the priority palliative care needs in Syria.
- Establish a national multi-disciplinary palliative cancer care committee affiliated with Syria's NCCC.
- Make available immediate-release oral morphine in all cancer care facilities and revise regulations limiting access to opioids.
- Ensure essential palliative care education and training for oncologists, nurses and other related professions contributing to palliative care provision (social workers, psychologists, clinical pharmacists, etc).
- Create a small palliative care team in each facility (at minimum a physician and a nurse) and home care teams.



■ The WHO–IAEA–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.

The 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.



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