



## UPDATE ON THE IARC INITIATIVE FOR RESILIENCE IN CANCER CONTROL (IARC-IRCC)

1. The present document describes an update on the research activities of the IARC Initiative for Resilience in Cancer Control (IARC-IRCC) (formerly, the IARC-C19 or the COVID-19 and Cancer Initiative).
2. The IRCC was launched in 2020 through a request from the Cancer Surveillance Branch (CSU) to the Governing Council and Scientific Council to support IARC in investigating the impact of the COVID-19 pandemic on cancer services, including health system disruptions and mitigation strategies. To capture crises at larger sense, the activities planned within the IARC-C19 have been expanded to include natural and human-made disasters. The updated major aims of the initiative cover three overarching workstreams:
  - i. **Conduct in depth monitoring of key indicators of cancer incidence, survival, and mortality during and after a crisis such as the COVID-19 pandemic.**
  - ii. **Explore reasons for disruptions to cancer services and mitigation strategies employed.**
  - iii. **Provide a tool to model the short-, medium and long-term impact of disruptions on cancer outcomes to improve resilience in cancer control.**
3. The first workstream, **conduct in depth monitoring of key indicators of cancer incidence, survival, and mortality during and after crisis such as the COVID-19 pandemic**, has encompassed the following activities:
  - a) **Collection of data**, as a fundamental element of the IRCC's activities. Consequently, since 2021, CSU has signed:
    - Five Collaborative Research Agreements (CRAs) with five cancer registries (Chiang Mai Cancer Registry, Lampang Cancer Hospital, Philippines Cancer Society-Manila Cancer Registry, Cancer Institute WIA in Chennai, and Tata Memorial Center in Mumbai) in three countries (Thailand, Philippines, India), and received datasets from all five cancer registries.
    - 15 Data Transfer Agreements (DTAs) with 15 cancer registries (Australia: New South Wales, Cancer Council Victoria, Western Australia; Canada: Alberta, British Columbia Cancer Agency, Manitoba, New Brunswick, Cancer Care Nova Scotia, Cancer Care Ontario, Prince Edward Island, Saskatchewan Cancer Agency; Ireland: National Cancer Registry of Ireland; New Zealand: Health New Zealand; and United Kingdom (UK): Queen's University of Belfast, Northern Ireland, and Welsh Cancer Intelligence and

Surveillance Unit of Public Health Wales) in five countries (Australia, Canada, Ireland, UK, New Zealand), and received databases from all 15 cancer registries.

- One CRA with the African Cancer Registry Network (AFCRN) for countries in sub-Saharan Africa and has received datasets from six cancer registries (Cote d'Ivoire: Registre des Cancers d'Abidjan; Eswatini: Eswatini National Cancer Registry; Tanzania: Dodoma Cancer Registry, Kilimanjaro Cancer Registry, Mwanza Cancer Registry; and Zambia: Zambia National Cancer Registry) in four countries (Cote d'Ivoire, Eswatini, Tanzania, Zambia). Additional data from other countries in sub-Saharan Africa is being collected.
- Data requests and discussions for support are ongoing with the Caribbean, Central and South American region, as well as with India, China, Turkey, Lebanon and Morocco.
- CSU has also received datasets from Norway and Denmark without DTAs (not requested as the data were aggregated).

**b) Impact of the COVID-19 pandemic on cancer diagnosis and stage:**

- This population-based study aims to assess the impact of the COVID-19 pandemic on incidence and stage at diagnosis of seven major cancer types across seven high-income countries in the International Cancer Benchmarking Partnership. Briefly, this study compares the expected number and rates of monthly diagnoses of cancer with those observed during 2020.
- The study found that incidence rates of cancer were lower during the first nine full months of societal lockdowns due to COVID-19 (April–December) across most countries and most cancer sites. The COVID-19 pandemic had the largest impact on cancer incidence during the first four months when societal lockdowns were in place across all countries.
- The largest reductions in incidence were observed for breast cancer, likely linked to temporary halts in screening services, and reductions in melanoma reflected disruptions in access to general health care. For stage at diagnosis, this study observed decreases in early-stage cancers at the beginning of the pandemic, but no increases in late-stage disease.

**b) Survival from cancer before and during the COVID-19 pandemic:**

- This population-based study aims to compare survival among patients with cancer diagnosed during the first year of the COVID-19 pandemic (2020) with those diagnosed in previous years. The study covers five cancer types across five high-income countries in the International Cancer Benchmarking Partnership.
- Preliminary findings suggest that short-term survival from cancer across these high-income countries during the first year of the COVID-19 pandemic was similar to survival in years preceding the pandemic, indicating limited short-term impacts of health system disruptions on cancer survival in this setting.

c) **Global impact of the COVID-19 pandemic on cancer mortality:**

- This population-based study aims to investigate the impact of the COVID-19 pandemic on mortality from six major cancers for countries whose data were available for 2020 or later in the WHO Mortality Database. Briefly, this study compares the expected mortality rates with those observed during the pandemic (2020–2022).
- Preliminary findings suggest that the impacts of the COVID-19 pandemic on global cancer mortality emerge two years after the onset of the pandemic. Effects were more pronounced in specific contexts, such as cancer types with poor prognosis and younger populations.

4. The second workstream, **explore reasons for disruptions to cancer services and mitigation strategies employed**, has encompassed the following activities:

a) **Global impact of the COVID-19 pandemic on delays and disruptions in cancer services:**

- This systematic review and meta-analysis synthesized the scale and impact of pandemic-related delays and disruptions on cancer services, including diagnosis, diagnostic procedures, screening, treatment, and supportive and palliative care.
- The study observed declines in the number of cancer screening participants (39.0%), diagnostic procedures (24.0%), diagnoses (23.0%), and treatment (28.0%) ranging from 15.0% decline for radiotherapy to 35.0% decline for systemic treatment during the pandemic compared with the pre-pandemic period.
- Countries of medium human development index (HDI) experienced greater reductions than high and very high HDI countries. There were no data from low HDI countries, emphasizing the need for increased investments in cancer surveillance and research in these settings.

b) **Global impact of COVID-19 mitigation strategies on disruptions in cancer services:**

- This systematic review, which is now published as [a peer reviewed research article](#) in the *Journal of Cancer Policy*, reviewed the implementation of mitigation strategies to reduce disruptions to cancer services across health system functions and their impact on cancer diagnosis and care during the pandemic. The strategies were grouped into four functions (governance, financing, service delivery, and resource generation) and sub-functions of the WHO's framework for health system performance assessment.
- Multiple mitigation approaches were implemented, predominantly affecting sub-functions of service delivery to control COVID-19 infection via the suspension of non-urgent cancer care, modified treatment guidelines, and increased telemedicine use in routine cancer care delivery. Resource generation was mainly ensured through adequate workforce supply. However, less emphasis on monitoring or assessing the effectiveness and financing of these strategies was observed. Seventeen studies suggested improved service uptake after mitigation implementation; the resulting impact on cancer diagnosis and care has not yet been established.

- These findings emphasize the importance of developing effective mitigation strategies across all health system functions to minimize disruptions to cancer services during crises. Improvements could be made in health service delivery (to ensure equity), governance (to monitor and evaluate the implementation of mitigation strategies), and financing.

**c) Health System Responses and Stakeholder Experiences Amidst the COVID-19 Pandemic**

- In this study we performed a mixed methods approach to provide an overview and comparison of the health system responses and cancer service in seven International Cancer Benchmarking Partnership countries during the first three years of the pandemic (2020 to 2022). Desktop review of grey literature was conducted alongside semi-structured interviews with key ICBP stakeholders.
- The study found that in 2020, all the ICBP countries experienced disruptions in cancer service provision, especially in cancer screening and surgical services. Disruptions in surgery were found to persist up to 2021 and 2022 in the four UK constituent countries, Australia and New Zealand. Common mitigation strategies deployed included telehealth, prioritisation strategies, treatment adaptation and fundings to improve capacity. Other country-specific mitigation strategies deployed included the COVID-19 free hubs and one-stop diagnostic centres (England, Northern Ireland and Wales), personal protective equipment monitoring and evaluation strategy (Scotland) and a cancer screening framework for priority populations (New Zealand). Based on the stakeholders' interviews, personal protective equipment shortages and inequity were identified as additional and common challenges across the countries. In 2021 and 2022, workforce shortages and burnout were identified as a major challenge in all ICBP countries, except for Norway. Although there were many common mitigation strategies identified (e.g. prioritization of services, telehealth, collaborations with private health services), the perceived effectiveness varied by country. Reflections on key lessons learnt included the importance of support for healthcare workforce, having effective communication and the need to rationalise services.

**d) Health systems resilience in coordinating cancer control during crises in selected low- and middle-income countries:**

- To provide insights on health system responses in low- and middle-income countries, a qualitative assessment of cancer control activities during crises such as the pandemic, natural disasters and war will be performed under the IRCC.
- Development of the protocol for this comparative case-study is ongoing. This study will build on the IRCC's systematic reviews on disruptions and mitigation strategies (sections 4.a and 4.b) and the qualitative study performed in section 4.c). Countries to be included in this study were selected to facilitate comparisons across different income classifications and global regions. Based on these criteria, along with consultations with key stakeholders from IARC Participating States, eight case countries were selected, taking into account: feasibility of qualitative follow-up; convenience of data collection; diversity of data sources within each country; and existence of a population-based cancer

registry in the country, which will allow us to cross analyse qualitative findings with quantitative data in the future. The eight selected case countries were: Benin, Brazil, China, India, Morocco, South Africa, Turkey, and Uganda.

- The first component of this study will be a scoping review of grey literature including policy documents to collect further information on disruptions and mitigation strategies in the eight selected countries. The documents included will be those that reported updates to recommended pathways on cancer diagnosis and care in the context of the COVID-19 pandemic.
- The second component of this study will collect information on the facilitators and barriers faced during crises including mitigation strategies through semi-structured interviews with health professionals from different service levels of cancer care in the eight selected countries. This study will describe and compare the experiences of the impact of crises on prevention and early detection services, curative treatment, and palliative care to assess challenges and opportunities in the cancer control continuum. The study's findings will provide a detailed understanding of the complex factors that influence health systems resilience in coordinating cancer control during the COVID-19 pandemic and other crises.

5. The third workstream, **provide a tool to model the long-term impact of disruptions on cancer outcomes to improve resilience in cancer control**, continues to develop as findings become available from the first two workstreams. Current developments encompass the following:

- A tool 'The Cervical Cancer Elimination Planning Tool (EPT)' has been developed to enable countries to create effective, sustainable cervical cancer strategies that are specifically adapted to their unique demographic and healthcare needs. Developed in 2021 to plan cervical cancer control actions during the COVID-19 pandemic, this tool has been re-developed to assist policymakers in planning, costing, and tailoring their cervical cancer programmes across the three pillars of the WHO global strategy – HPV vaccination, cervical screening, and cancer treatment - ultimately supporting countries to plan their roadmap towards elimination. The tool provides short-, medium-, and long-term disease burden and economic estimates of the impact of implementation of the global strategies based on the WHO 90/70/90 triple-intervention strategy across 78 low- and middle-income countries, and can be accessed [here](#). A paper is currently being written, and the tool will be launched in parallel with the publication of this paper.
- A second tool, as an expansion of the EPT, will be designed around the four functions within the WHO's framework for health system performance assessment: governance, financing, resource generation, and service delivery. Data and insights from point 3 and 4 above will be used as inputs for this tool. At the moment, the framework of the tool is being developed with collaborating partners from the International Partnership for Resilience in Cancer Systems.