

IARC Impact in practice series

The India experience



“India is not just participating in IARC project: it is helping generate the evidence that shapes how cancer prevention and screening are approached internationally.”
Dr Partha Basu, IARC Liaison Officer for India

Since becoming an IARC Participating State in 2006, India has used IARC as a strategic bridge between **national cancer-control needs and global cancer science**. IARC membership gives Indian institutions access to major international consortia, shared methods, and globally benchmarked evidence, while ensuring that the results remain directly relevant to Indian public health priorities. But the benefits run both ways: **IARC and global public health also gain from India’s scale, institutional depth, and real-world research platforms**, which help generate evidence that is both globally credible and operationally relevant. In practice, the partnership works through strong national institutions and research centres and regular engagement with the Ministry of Health at central and state level. As a result, the evidence produced through collaborative research travels quickly into policy, programme design, and public decision-making.

Why IARC membership made the difference for India:

- **Scientific leadership and deeper integration in global research:** In the past decade, Indian researchers produced 191 oncology publications with IARC, linking them to 1,870 institutions in 177 countries. The collaboration is concentrated in areas where international scale matters most - HPV and cervical cancer prevention, screening and early detection, oral and head and neck cancers, and metabolic risks - giving Indian teams a place in the studies that shape global cancer science.
- **Evidence that informs policy and regulation:** IARC-linked evidence appears in treatment guidelines, tobacco-control reports, and NCD control strategies, where it is used to benchmark burden, quantify major risks, and support prevention policy. India also features in an IARC-led seven-country analysis of preventable cancer deaths, reinforcing the case for stronger action on tobacco, alcohol, excess weight, and HPV prevention. Indian and IARC researchers have effectively collaborated in several implementation research studies to identify solutions to improve early detection that are relevant and scalable in Indian context.
- **Global infrastructures that turn India’s assets into decision-ready evidence:** Through IARC, India’s flagship platforms - HPV vaccine cohorts, indigenous HPV diagnostics, HPV-AHEAD, and real-world screening studies - are connected to shared protocols and pooled analyses that no country could build alone. India also co-funds IARC’s key infrastructures, including SURVCAN-3 and support for HPV vaccine and diagnostic development, ensuring that Indian data help shape the international evidence base for prevention and screening.
- **Stronger national capacity and standards:** Since the 1960s, around 36 Indian scientists have held IARC fellowships, and 31 trainees joined IARC learning attachments in 2021–2025. India also hosts the GICR Regional Hub in Mumbai and contributes experts to *IARC Monographs*, *IARC Handbooks*, and WHO tumour classifications. The result is lasting national capacity and a stronger Indian voice in the global standards that guide prevention, screening, and diagnosis.

Part I. Scientific leadership through international collaboration

→ Exceptional intensity and depth of collaboration

India’s partnership with IARC is a deeply integrated collaboration that anchors Indian institutions in large, coordinated, multi-country cancer studies, exactly the kind of architecture needed when the questions demand scale, standardisation, and global comparability. The publication footprint gives one indication of this collaboration: **191 oncology publications were co-authored with IARC over the last decade**¹. More revealing, however, is the structure of that work. India–IARC papers involve a **median of 9 institutions per publication**, compared with **1 in the non-IARC baseline**, suggesting that



“For India, the value of working with IARC is not only technical support; it is access to a global scientific ecosystem that no national programme could build alone.”

Dr Partha Basu
IARC Liaison Officer
For India

¹ Data derived from Web of Science records of IARC–India co-authored papers published between January 2016 and January 2026.

Cancer in India: a high-burden profile with clear prevention opportunities

Based on [GLOBOCAN 2022 estimates](#), about **1.41 million new cancer cases** and **917 000 deaths** in India in 2022, with a **1 in 9 lifetime risk** of developing cancer. The leading cancers are **breast, lip and oral cavity, cervix uteri, lung, and oesophagus**, reflecting the combined impact of **tobacco and alcohol use, persistent gaps in HPV vaccination and cervical screening, and changing metabolic and reproductive patterns**. This profile points to large, still-untapped gains from **stronger tobacco control, HPV vaccination and cervical screening, infection prevention and treatment, and more targeted early detection**.

collaboration with IARC is associated with a much more international and networked research model. In total, India-IARC co-authored work spans **1,870 unique institutions across 177 countries**, connecting Indian teams to a global research network that would be extremely hard to assemble through domestic mechanisms alone.

Web of Science micro-topic analysis of these outputs shows a tight concentration in high-impact, policy-relevant areas, led by:

- **HPV and cervical cancer prevention;**
- **Screening disparities and early detection;**
- **Head and neck cancer and oral precancer**
- **Nutrition, obesity, and hypertension management;**
- **Maternal health equity and women's cancers;**
- **Epigenetic regulation and biliary diseases.**

➔ **Leadership in global research infrastructure**

Through IARC, Indian institutions participate in - and help shape - major international platforms that generate evidence for vaccination, screening, and cancer control. These collaborations plug India's trials and programmes into multi-country architectures with shared protocols and pooled analyses. Examples from the past decade (2016-2026) include:

- **Human papillomavirus vaccine platforms**, which have made India a major site for evaluating dose schedules, vaccine products, and elimination strategies (see Box #3).
- **Real-world screening and implementation platforms**, where harmonised studies on breast and cervical cancer, integrated early-diagnosis models such as **Access Cancer Care India**, and newer work on **artificial intelligence-based detection of cervical neoplasia, human papillomavirus testing in urine samples, and indigenous diagnostics validated through international platforms** help define what can be delivered at scale in routine health systems (see Box #2 and next subsection).
- **Platforms on oral and head & neck cancers:** India is a core partner in **Human Papillomavirus: Role of Human Papillomavirus Infection and Other Cofactors in the Etiology of Head and Neck Cancer in Europe and India (HPV-AHEAD)**, an IARC-led network on HPV and cofactors in head and neck cancer across Europe and India, and in modelling the natural history of oral cancer with **Sikkim Manipal University** and the **Regional Cancer Centre Thiruvananthapuram**. These platforms generate progression models and risk estimates tailored to high-burden settings, with methods harmonised across countries so that Indian evidence shapes international guidance on prevention and early detection.
- **India-funded contributions to global consortia:** Domestic institutions also finance India's role in shared infrastructures. **Tata Memorial Centre** supports **SURVCAN-3**, an IARC survival study pooling data from **27 registries in 14 countries**,

Box #2: Indigenous diagnostics plugged into global science: the i-HPV collaboration

India's partnership with IARC helps move **Indian-made technologies onto the global stage**. The **i-HPV platform** - a collaboration between IARC and the **Department of Biotechnology, Government of India**, with support from the **Bill & Melinda Gates Foundation** - shows domestic innovation can be turned into internationally benchmarked technology.

The project delivered [the first validation of an HPV detection test produced in India](#) that can identify the **eight most common cancer-causing HPV types**. Crucially, the assay was developed by adapting an existing **Indian COVID-19 RT-PCR platform** for cervical cancer screening, showing how local technological capacity can be redirected toward high-priority public health needs. What makes i-HPV especially significant is the way it was validated. Rather than relying only on national data, the project used **cervical samples from the IARC biobank** and applied **international criteria for HPV primary screening**, adapted for lower-valency tests through an **IARC expert consultation** and subsequent methodological work. This gave India-developed assays a level of comparability and credibility that would have been difficult to achieve through domestic channels alone.

For policymakers, i-HPV is a model of how India can use IARC membership to **validate affordable, locally developed diagnostics to international standards**, strengthen screening options at home, and position Indian manufacturers to supply high-quality tools to other **low- and middle-income countries**.

helping deliver comparable cancer-survival statistics for low- and middle-income settings and ensuring Indian data are embedded in global outcome benchmarks.

➔ Shaping the global cancer research agenda and standards

Indian experts and diplomats help steer IARC's direction. Through seats on the **Scientific Council and Governing Council**, and active involvement in developing the [Medium-Term Strategy \(MTS\)](#), India contributes directly to setting IARC's research and capacity-building priorities. This high-level engagement is a form of **soft power**. By shaping IARC's work programme, India brings national and regional realities into global decision-making while gaining early insight into emerging priorities, methods, and partnership opportunities, aligning its own cancer plans and investments with cutting-edge international evidence.

India also play a central role in developing widely respected **international evidence frameworks and classification standards** that shape global cancer science, prevention, and regulation. During the 2020-2025 cycle, 14 Indian experts have contributed to the IARC's flagship evaluations, including:

- **IARC Monographs Volume 126:** *Opium Consumption*
- **IARC Monographs Volume 128:** *Acrolein, Crotonaldehyde, and Arecoline*
- **IARC Monographs Volume 135:** *Perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS)*
- **IARC Monographs Volume 137:** *Hydrochlorothiazide, Voriconazole, and Tacrolimus*
- **IARC Handbooks of Cancer Prevention Volume 18:** *Cervical cancer screening*
- **IARC Handbooks of Cancer Prevention Volume 19:** *Oral cancer prevention*
- **IARC Handbooks of Cancer Prevention Volume 20B:** *Alcohol policies*
- **IARC Handbooks of Cancer Prevention Volume 21:** *Lung cancer screening and early detection approaches*
- **World Health Organization Classification of Tumours (Blue Books) 5th and 6th editions:** Editorial board and expert contributions supporting international tumour classification standards, diagnostic criteria, and reporting systems across multiple organ systems



"IARC's impact on global cancer research is already profound. Core resources such as CI5 and GLOBOCAN are indispensable tools for countries and institutions to set priorities and target their efforts."

CS Pramesh
Tata Memorial
Hospital

Part II. From evidence to action: IARC's impact on national Public Health

➔ Evidence that informs national regulation and prevention policy

In India, IARC-linked evidence appears in government reports, clinical guidelines, and strategic health documents, where it feeds directly into how cancer and other Non-Communicable Diseases (NCDs) risks are framed and prioritised. An [Overton](#) analysis of Indian public-sector and policy documents (2015-2026) shows IARC-led work being cited by the **Government of India** and national expert bodies in areas ranging from tobacco control to oncology standards and gender-responsive tuberculosis (TB) policy. Across these documents, IARC outputs are used to:

- **Quantify cancer burden and set baselines: Indian national *Standard Treatment Guidelines – Oncology*** draw on IARC global cancer statistics and childhood cancer classifications to frame the scale and profile of cancer in India, anchoring clinical guidance in internationally comparable incidence data.
- **Shape tobacco control narratives:** The ***Report on Tobacco Control in India*** and related government publications cite multiple IARC-linked case-control studies and trials from Kerala, Chennai, and other centres on oral, pharyngeal, laryngeal, and lung cancer, highlighting the risks from smoking, smokeless tobacco, betel quid chewing, alcohol, and passive smoking. These data are used to characterise how tobacco use and related behaviours drive site-specific cancer patterns in India and to substantiate the report's case for stronger tobacco-control measures.
- **Inform wider NCD and risk-factor strategies:** National documents on noncommunicable diseases, gender-responsive TB policy, and adult tobacco use draw on large, comparative burden-of-disease and risk-factor analyses involving IARC researchers, using them to benchmark India against peer countries and pinpoint priority exposures. India also features in [an IARC-led seven-country study](#) showing that around **2 million cancer deaths each year are attributable to preventable risks** such as tobacco, alcohol, excess weight, and HPV infection, strengthening the case for ambitious, prevention-focused policies.

➔ Evidence that reshapes how India does cancer screening

In cancer screening, India-IARC collaboration has gone well beyond “proof of concept” to test **what is feasible at scale in a resource-constrained health system**:

- **Breast cancer: low-cost, task-shifted pathways:** [A 14-year randomised trial of triennial clinical breast examination in Trivandrum](#) showed

Box #3: HPV vaccination: India as a global game-changer for cervical cancer elimination

India's collaboration with IARC on HPV vaccination has changed the terms of the global debate on cervical cancer prevention, helping shift the default from **three doses to one**, and from dependence on imported products to the possibility of **affordable, locally produced vaccines**.

At the core is the long-running [IARC-India human papillomavirus vaccine project](#), launched in 2009 with support from the **Bill & Melinda Gates Foundation** and implemented through a network of major Indian institutions, including the **All India Institute of Medical Sciences, Tata Memorial Centre, and the Rajib Gandhi Center for Biotechnology**. Following more than **16,000 women across 13 Indian centres**, the study showed that **a single dose protects against persistent human papillomavirus 16/18 infection and cervical precancer as effectively as two or three doses**. It remains the only study worldwide with enough screening-eligible women to use cervical precancer as the main endpoint and demonstrate durability of protection by a single dose beyond 16 years of vaccination.

IARC and Indian partners then translated these findings into programme choices. [Modelling published in The Lancet Oncology](#) showed that a **single-dose national programme with catch-up vaccination** could reduce lifetime cervical cancer risk in India by up to **65%**, while still reaching the **World Health Organization elimination threshold** in every state. In parallel, [IARC worked with the Serum Institute of India and other partners on the phase 2/3 evaluation of Cervavac](#), an Indian-made quadrivalent vaccine, helping support marketing authorization and the prospect of **large-scale, lower-cost supply**.

Taken together, [this is a rare full chain of evidence: long-term cohort data, policy modelling, and evaluation of an indigenous vaccine](#). For India, it makes human papillomavirus vaccination a realistic national strategy. For IARC, it is one of the clearest examples of how rigorous science can move from **trial to policy to scale**.

screening strategies that are stress-tested in its own districts and aligned with its national NCD and cancer plans. IARC, in turn, gains **large, diverse, real-world platforms** where global recommendations on breast and cervical cancer screening can be refined, challenged, and translated into delivery models that other countries can realistically adopt.



“Implementation research is one of IARC’s great strengths. For evidence to matter, it has to be context-specific: what works in one setting cannot simply be assumed to work in another.”

CS Pramesh
Tata Memorial
Hospital

substantial downstaging and better survival, demonstrating that **breast awareness plus timely diagnosis** can generate major gains even where mammography is not widely available. Building on this, [a multi-hospital study in Kolkata](#) is testing a **portable ultrasound device operated by non-radiologist health workers** to triage women who screen positive on clinical breast examination: a practical model for frontline breast-cancer diagnosis in lower-resource settings.

- **Cervical cancer: optimising human papillomavirus-based algorithms:** In women living with HIV, [an India-IARC trial comparing human papillomavirus “screen-and-treat” versus “screen-triage-and-treat”](#) found that the triage-based approach is **non-inferior for human papillomavirus clearance while reducing overtreatment**. Additional work on **artificial intelligence-based detection of cervical neoplasia, human papillomavirus detection in urine samples**, and the **She Can project** - which is implementing **human papillomavirus detection-based screening in rural areas** with support from the **Global Alliance for Chronic Diseases** - shows how India is also becoming a platform for the next generation of screening tools and delivery models.

- **Integrated, equity-focused early detection:** The [Access Cancer Care India project](#), funded by the **United Kingdom Medical Research Council**, [was implemented in Rajasthan, Kerala and Tamil Nadu](#). Using implementation research, it designed and tested **integrated early-diagnosis models** for breast, cervical, and oral cancers alongside routine noncommunicable disease checks in underserved communities. Learning lessons from ACCI study the HPV detection based screening programme planned in Tamil Nadu is considering introduction of community-based sample collection supported by navigation.

For policymakers, the value of these collaborations is twofold. India gets **fit-for-purpose**

Part III. Building capacity for lasting impact

→ Stronger data for better decisions

India is not only a user of IARC cancer data: it is a **regional engine for better data** within the [Global Initiative for Cancer Registry Development \(GICR\)](#), the IARC-led partnership to expand and strengthen population-based cancer registration worldwide. The [GICR Regional Hub for South, East and South-Eastern Asia](#), based at **Tata Memorial Centre in Mumbai**, is the first IARC Regional Hub for Cancer Registration. It builds capacity for population-based cancer registries across 25 countries, including India, through technical assistance, standardised methods (e.g. CanReg-based systems), and hands-on training.

Within India, this ecosystem supports registry development and quality improvement, including [the first dedicated population-based childhood cancer registry](#), and underpins India's contribution to global survival platforms.

→ India's cancer evidence workforce of the future

Training and knowledge exchange are a central pillar of the India–IARC relationship. Since the mid-1960s, **around 36 Indian scientists have held competitive IARC fellowships**, creating a long-standing cadre of researchers with first-hand experience of IARC methods, infrastructures, and networks. This has been reinforced by a continuous pipeline of early-career talent: **31 trainees from Indian institutions** have taken part in IARC short-and medium-term training attachments in the **2021–2025** cycle.

This engagement is part of IARC's wider capacity-building ecosystem, which includes the Postdoctoral Fellowship Programme, the IARC Summer School, the IARC Learning Platform, and global networks for cancer registries, screening, and biobanking. Together, these initiatives train thousands of professionals worldwide and generate durable benefits: in a 2024 outcome survey, **98% of postdoctoral respondents reported transferable skills, 72% maintained research ties with IARC after training, and over half progressed to leadership roles (53%) or managed independent research funding (52%)**. This creates a **two-way multiplier effect**: expertise gained at IARC is reinvested in national institutions, while the priorities, data, and methodological strengths of participating countries feed back into IARC's networks, helping shape future research, standards, and capacity-building efforts.

Capacity building is also embedded directly in joint projects:

- [Advanced colposcopy and cervical precancer management courses](#), co-organised with Chittaranjan National Cancer Institute and partners, strengthening skills along the screening-to-treatment pathway;
- [Hands-on training for non-radiologist clinicians and health workers](#) in clinical breast examination and in the use of **portable breast ultrasound** to triage women who screen positive, linked to multi-hospital research studies;
- **Implementation and data-collection training** within the Access Cancer Care India project and other early-diagnosis platforms.

A **Memorandum of Understanding (2022–2027)** between IARC and the **Indian Council of Medical Research (ICMR)/National Centre for Disease Informatics and Research (NCDIR)** anchors this work in a formal institutional framework. The MoU provides a shared agenda for collaboration on cancer registration, data quality, analytical methods, and training, ensuring that India's capacity-building efforts are strategic, sustained, and tightly linked to national cancer-control priorities.