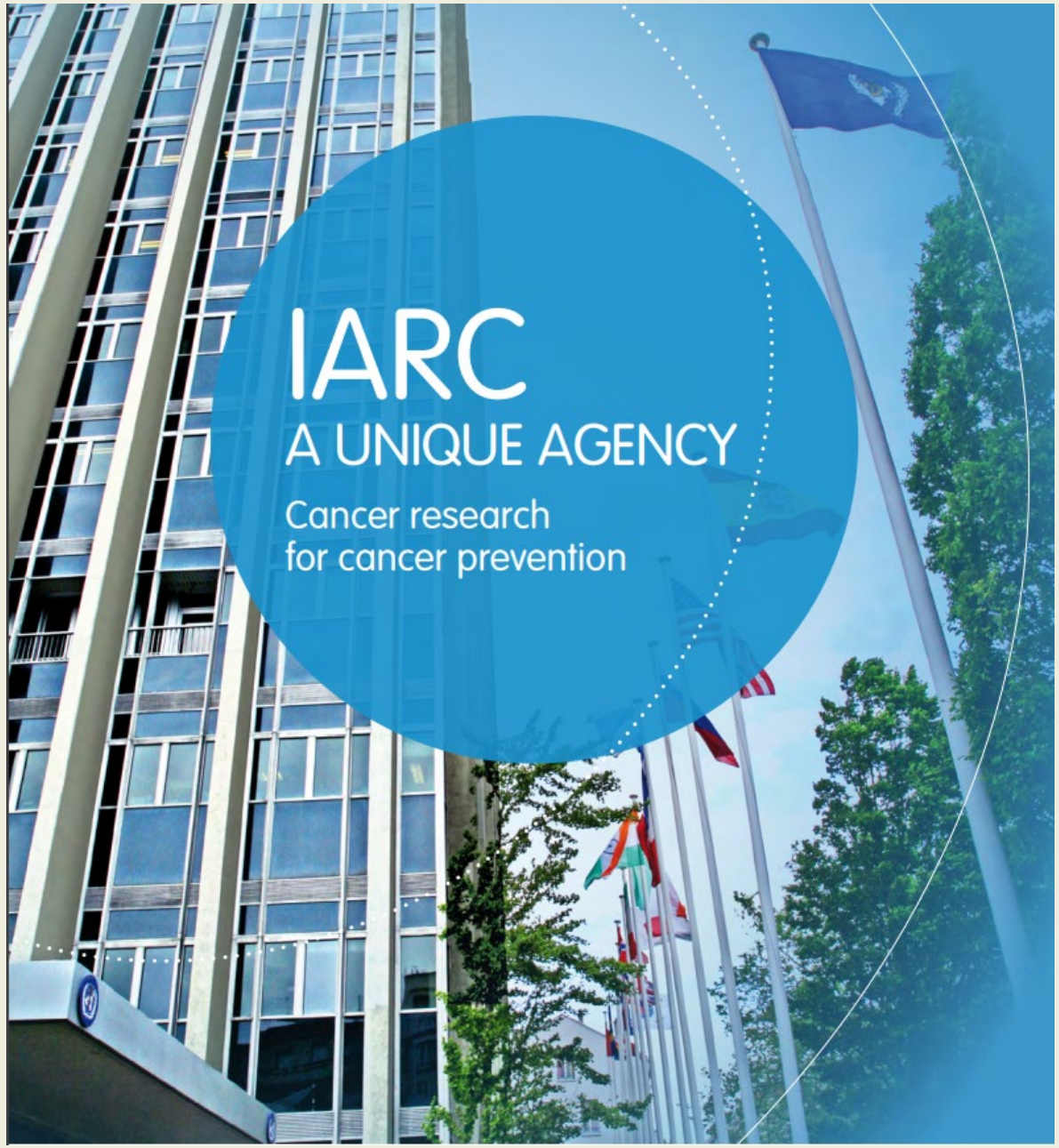
The contribution of the IARC-WHO to patients globally

Dr Catherine SAUVAGET, MD, PhD

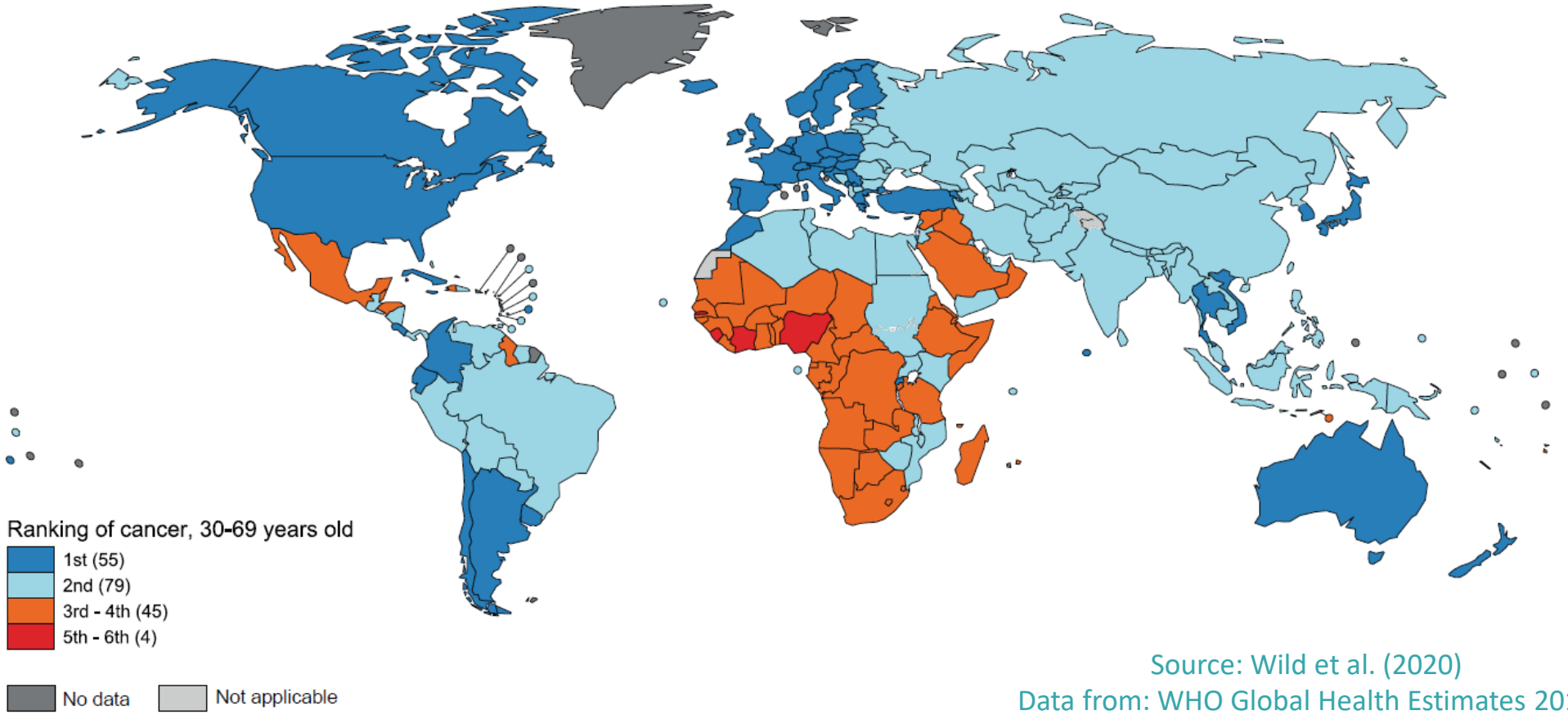
International Agency for Research on Cancer

World Health Organization


IARC
A UNIQUE AGENCY
Cancer research
for cancer prevention

Cancer is the first or second leading cause of premature death in 134 countries

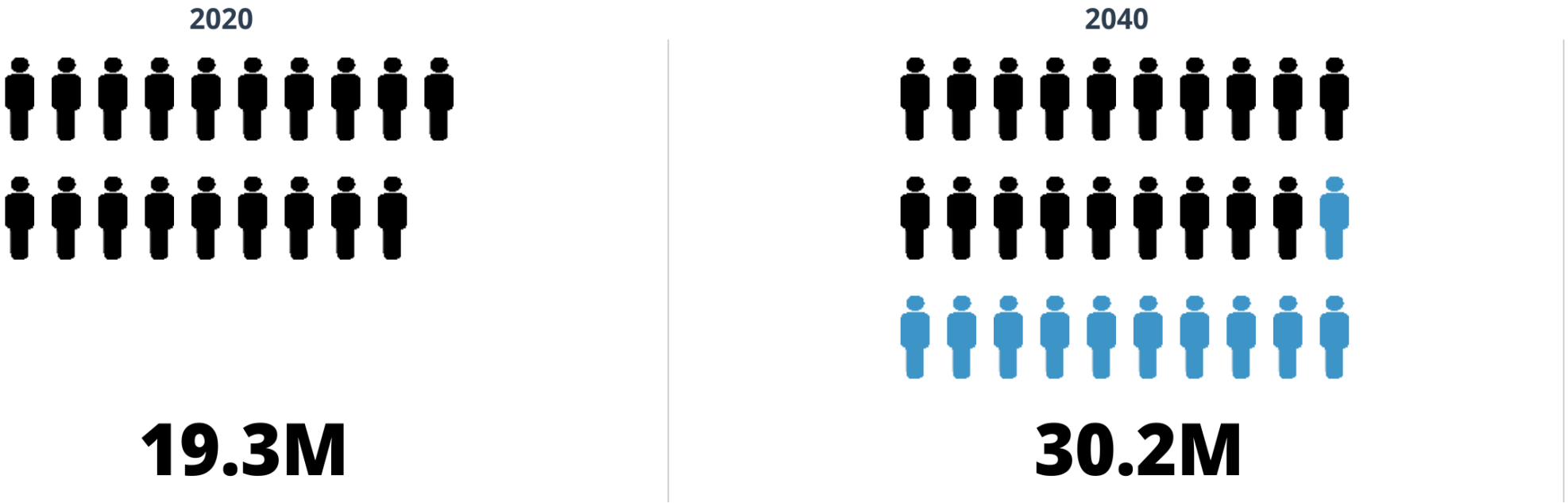
Fig. 1.1.2. Global map of cancer as a leading cause of premature death (i.e. at ages 30–69 years), indicating the rankings, with the numbers of countries in parentheses.



Source: Wild et al. (2020)
Data from: WHO Global Health Estimates 2016

The cancer burden is expected to increase…

Estimated number of new cases from 2020 to 2040, Both sexes, age [0-85+]
All cancers
World



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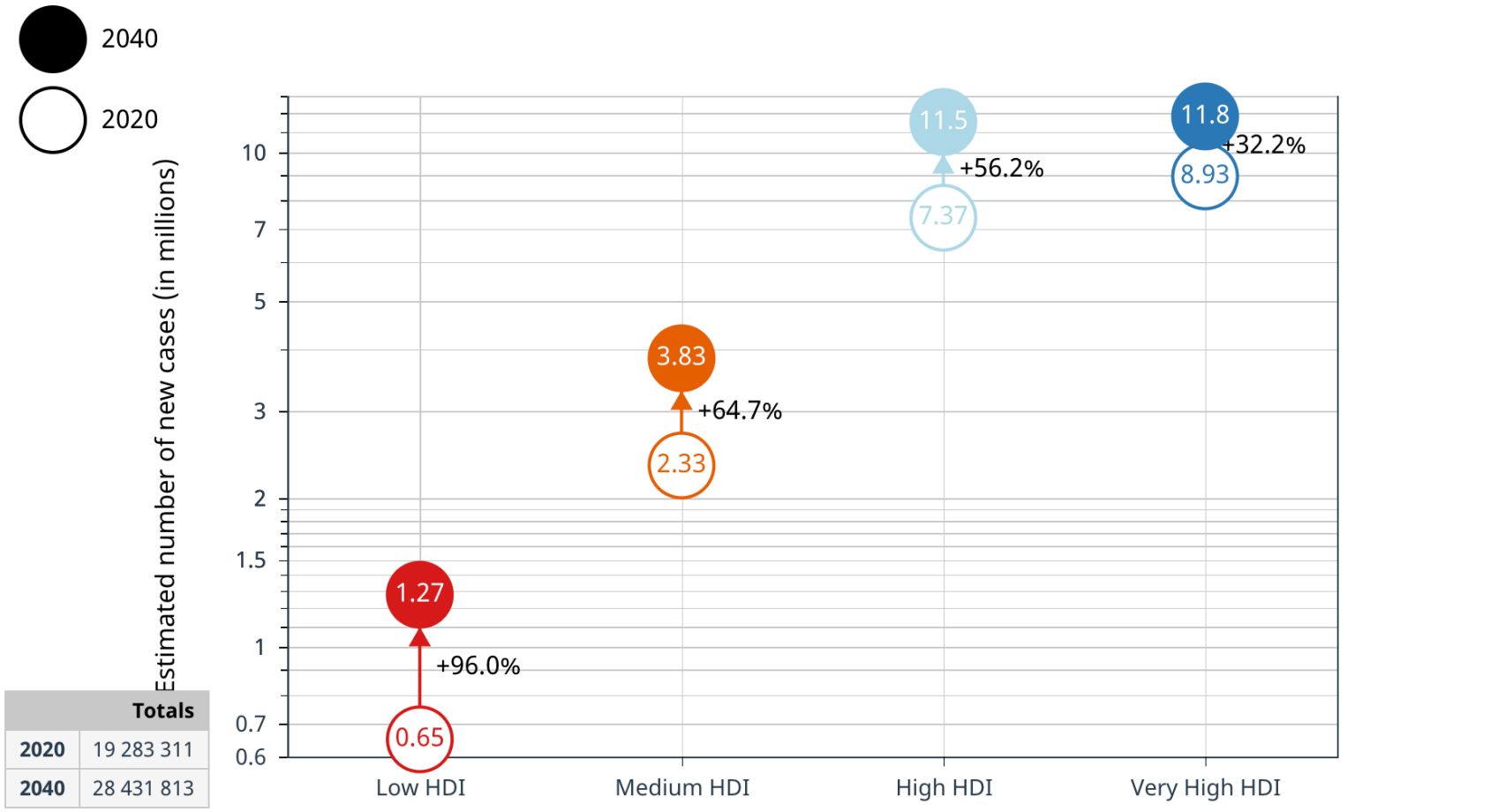
…and to increase more in countries with low HDI

Estimated number of new cases from 2020 to 2040, Both sexes, age [0-85+]
All cancers



	Totals
2020	19 283 311
2040	28 431 813

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IARC - an international effort to combat cancer

IARC is *the specialized cancer Agency of WHO,* established in May 1965 following an initiative by French leading scientists supported by General de Gaulle, who proposed the idea that *advanced nations could unite to curb a growing global health threat: cancer.*

IARC's 27 Participating States

IARC – an international experience

- 300 staffs
- 50 countries
- Post-graduate students, post-doctoral scientists, senior visiting scientists

Cancer research for cancer prevention

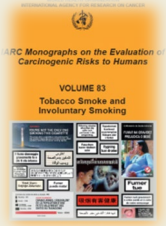
To provide the scientific evidence-base for prevention

“A catalyst to progress”

Five priorities

Describing occurrence

Establishing causes



Education and training

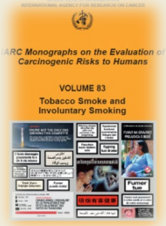
Evaluating prevention

Supporting implementation

Five priorities

Describing occurrence

Establishing causes



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GLOBAL INITIATIVE FOR CANCER REGISTRY DEVELOPMENT

IARC REGIONAL HUBS FOR CANCER REGISTRATION

GLOBAL INITIATIVE FOR CANCER REGISTRY DEVELOPMENT

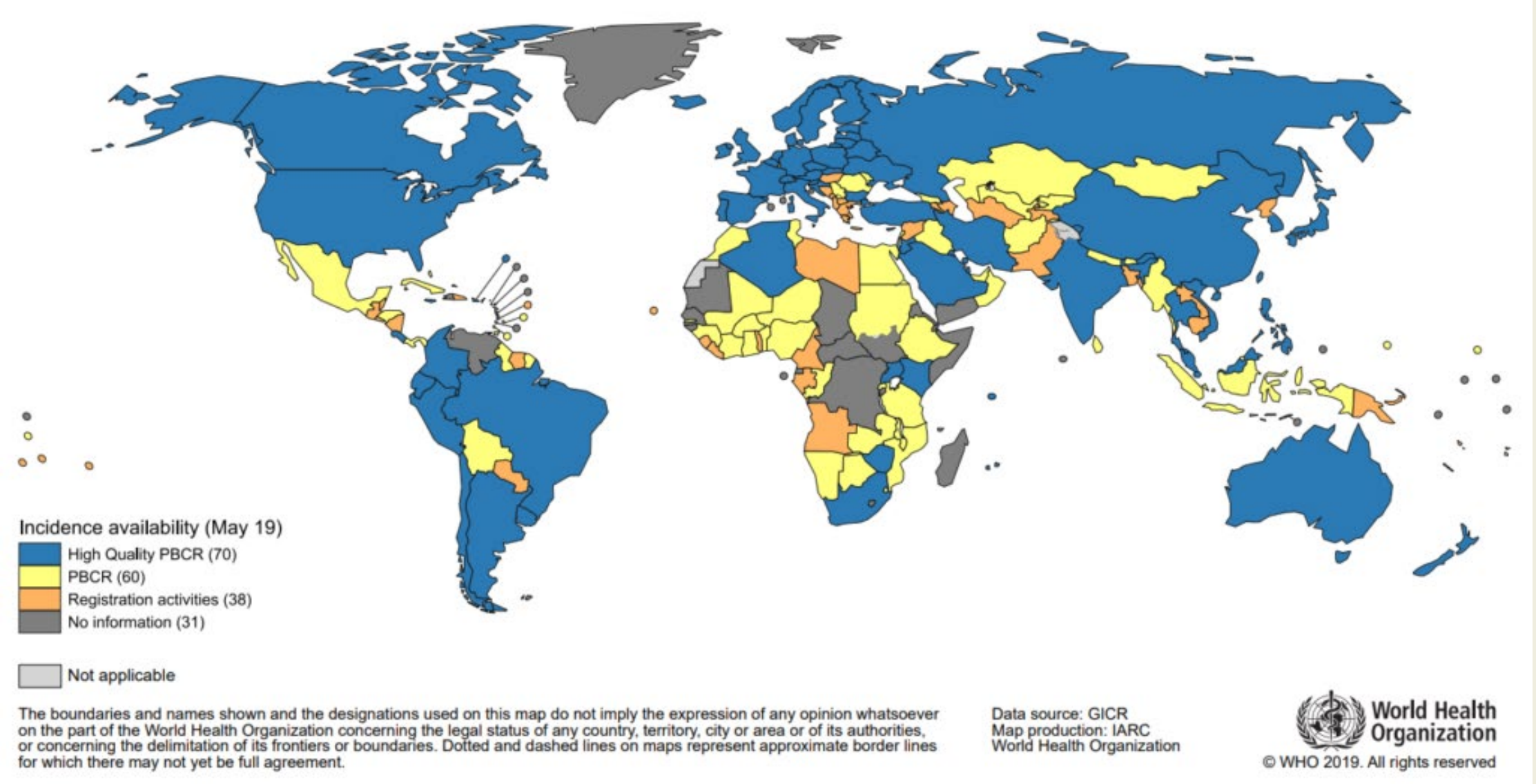
INITIATIVE MONDIALE POUR LE DEVELOPPEMENT DES REGISTRES DU CANCER

INICIATIVA MUNDIAL PARA EL DESARROLLO DE REGISTROS DE CÁNCER

- Caribbean
- Latin America
- Northern Africa, Central and Western Asia
- Pacific Islands
- South, East and South-Eastern Asia
- Sub-Saharan Africa

About our partners

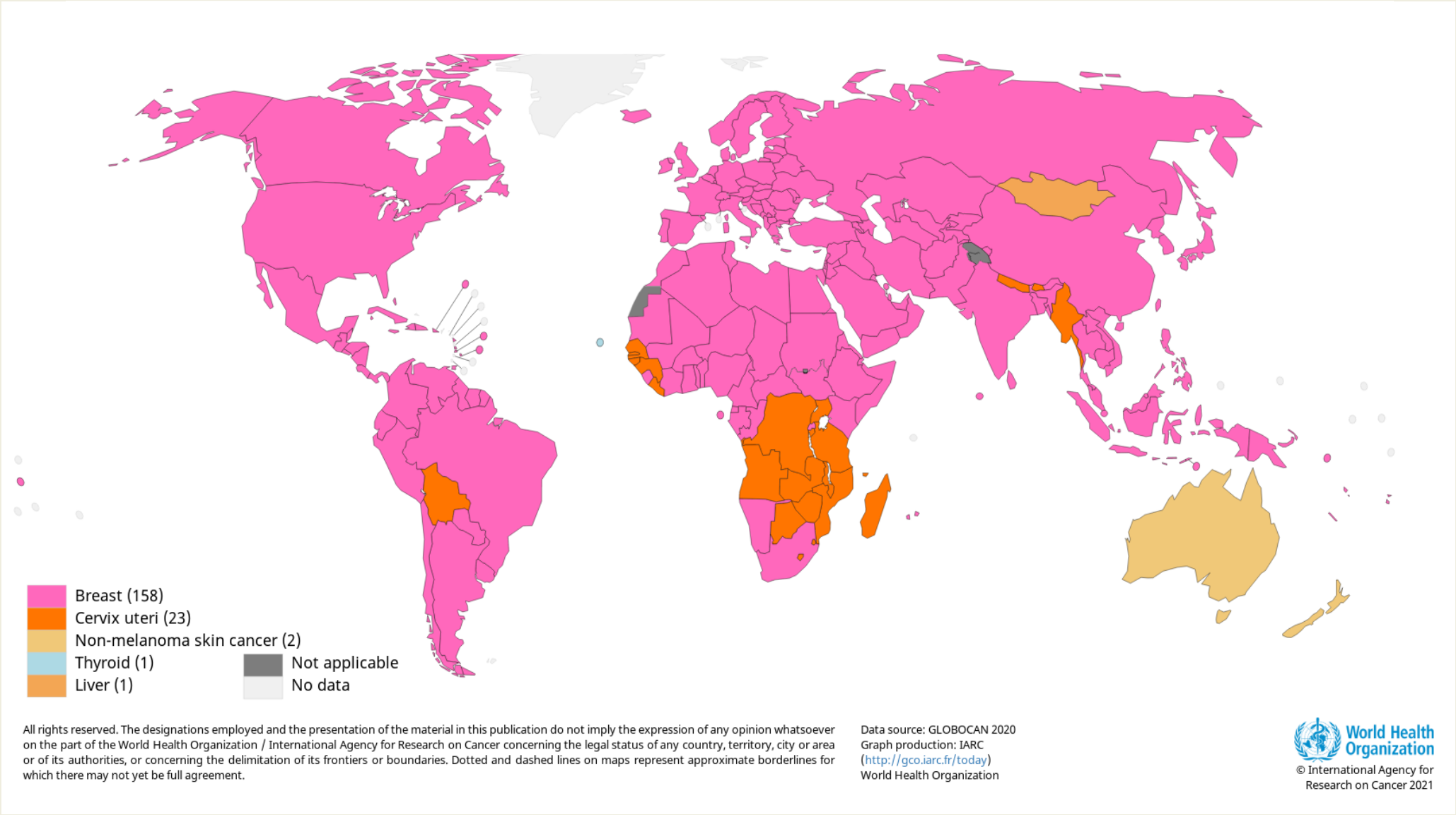
Availability of cancer registries



The importance of data

to better describe and understand the cancer burden

Top cancer per country, age-standardized incidence rates in women

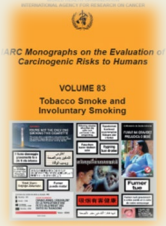


Data source: GLOBOCAN 2020
Graph production: IARC (http://gco.iarc.fr/today)
World Health Organization

Five priorities

Describing occurrence

Establishing causes



Evaluating prevention

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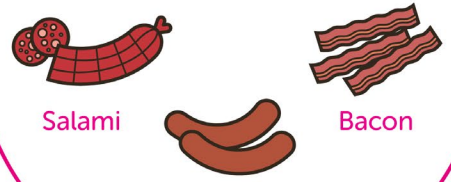
Education and training

Monographs Programme

Meat and cancer: How strong is the evidence?

Processed meats have been given Group 1 classification

Includes

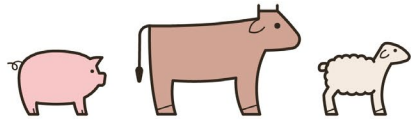


Salami

Bacon

Sausages and hot dogs

Red meats have been given Group 2A classification



Pork

Beef

Lamb

(Does not include chicken or fish)

IARC carcinogenic classification groups

- Group 1 — Causes cancer
- Group 2a — Probably causes cancer
- Group 2b — Possibly causes cancer
- Group 3 — Not classifiable as a cause of cancer
- Group 4 — Probably not a cause of cancer

These categories represent how confident IARC is that red and processed meat cause cancer in humans, not how many cancers it causes.

Together we will beat cancer

CANCER RESEARCH UK

Five priorities

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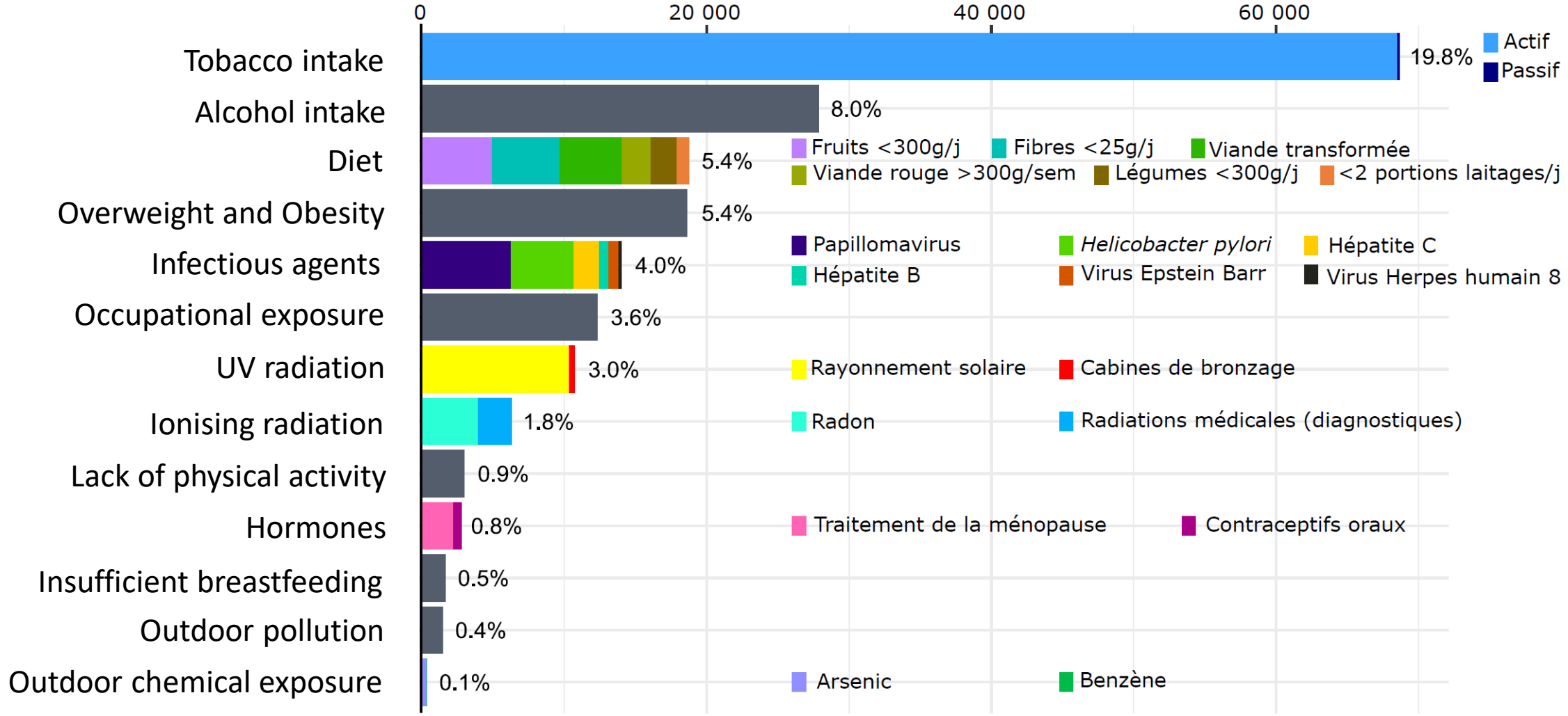
Number of new cancers attributable to lifestyle and environment, France 2015



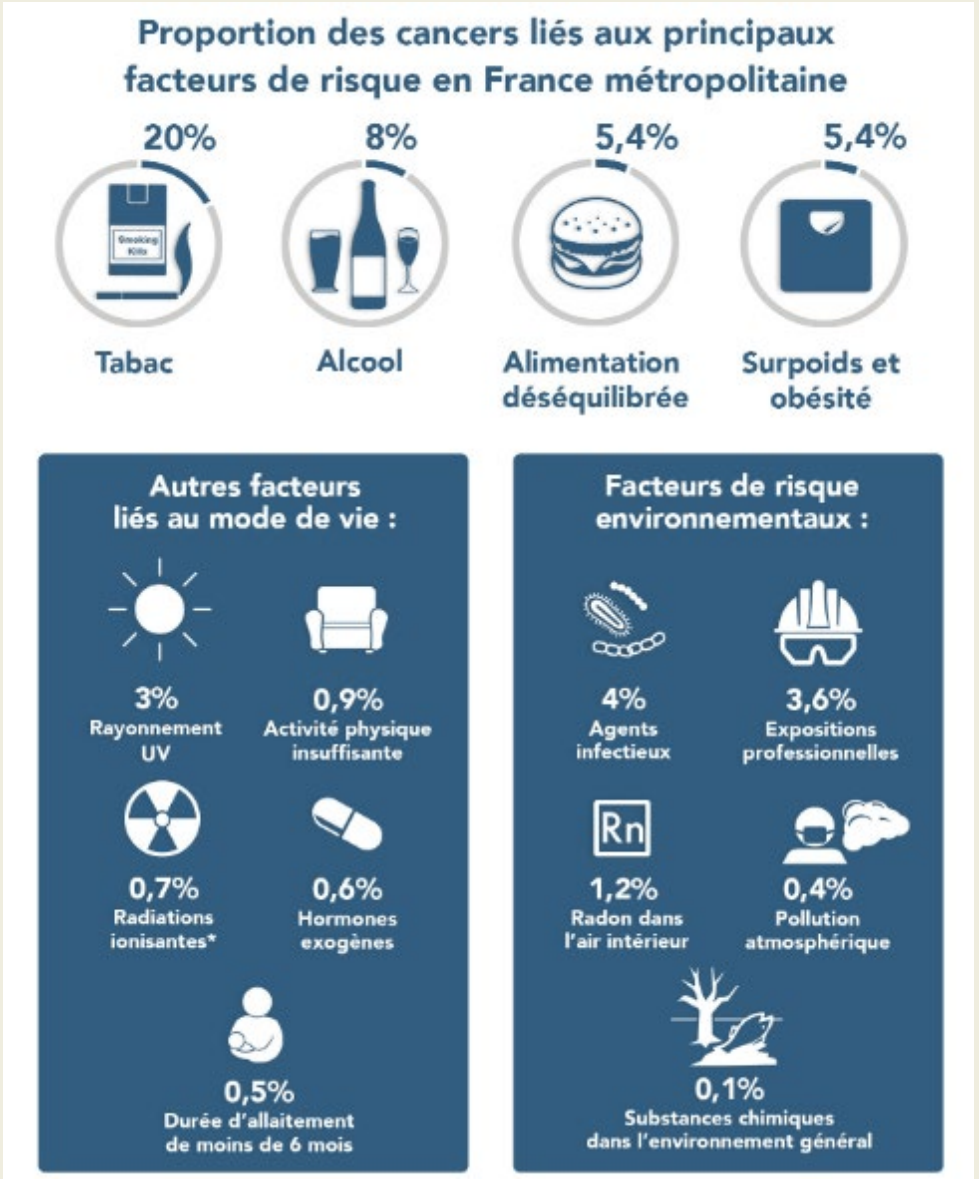
Centre international de Recherche sur le Cancer

Organisation mondiale de la Santé

Source: IARC (2018). Les cancers attribuables au mode de vie et à l'environnement en France métropolitaine.

INSTITUT NATIONAL DU CANCER

Population attributable fraction



EUROPEAN CODE AGAINST CANCER

12 ways to reduce your cancer risk

1 Do not smoke

Do not use any form of tobacco.

2 Make your home smoke free

Support smoke-free policies in your workplace.

3 Take action to be a healthy body weight

4 Be physically active in everyday life

Limit the time you spend sitting.

5 Have a healthy diet:

- Eat plenty of whole grains, pulses, vegetables and fruits.
- Limit high-calorie foods (foods high in sugar or fat) and avoid sugary drinks.
- Avoid processed meat; limit red meat and foods high in salt.

6 If you drink alcohol of any type, limit your intake

Not drinking alcohol is better for cancer prevention.

7 Avoid too much sun, especially for children

Use sun protection. Do not use sunbeds.

8 In the workplace, protect yourself against cancer-causing substances by following health and safety instructions

9 Find out if you are exposed to radiation from naturally high radon levels in your home

Take action to reduce high radon levels.

10 For women:

- Breastfeeding reduces the mother's cancer risk. If you can, breastfeed your baby.
- Hormone replacement therapy (HRT) increases the risk of certain cancers. Limit use of HRT.

11 Ensure your children take part in vaccination programmes for:

- Hepatitis B (for newborns).
- Human papillomavirus (HPV) (for girls).

12 Take part in organized cancer screening programmes for:

- Bowel cancer (men and women).
- Breast cancer (women).
- Cervical cancer (women).

Five priorities

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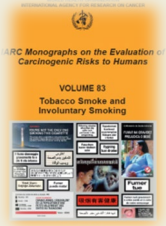

Evaluating prevention

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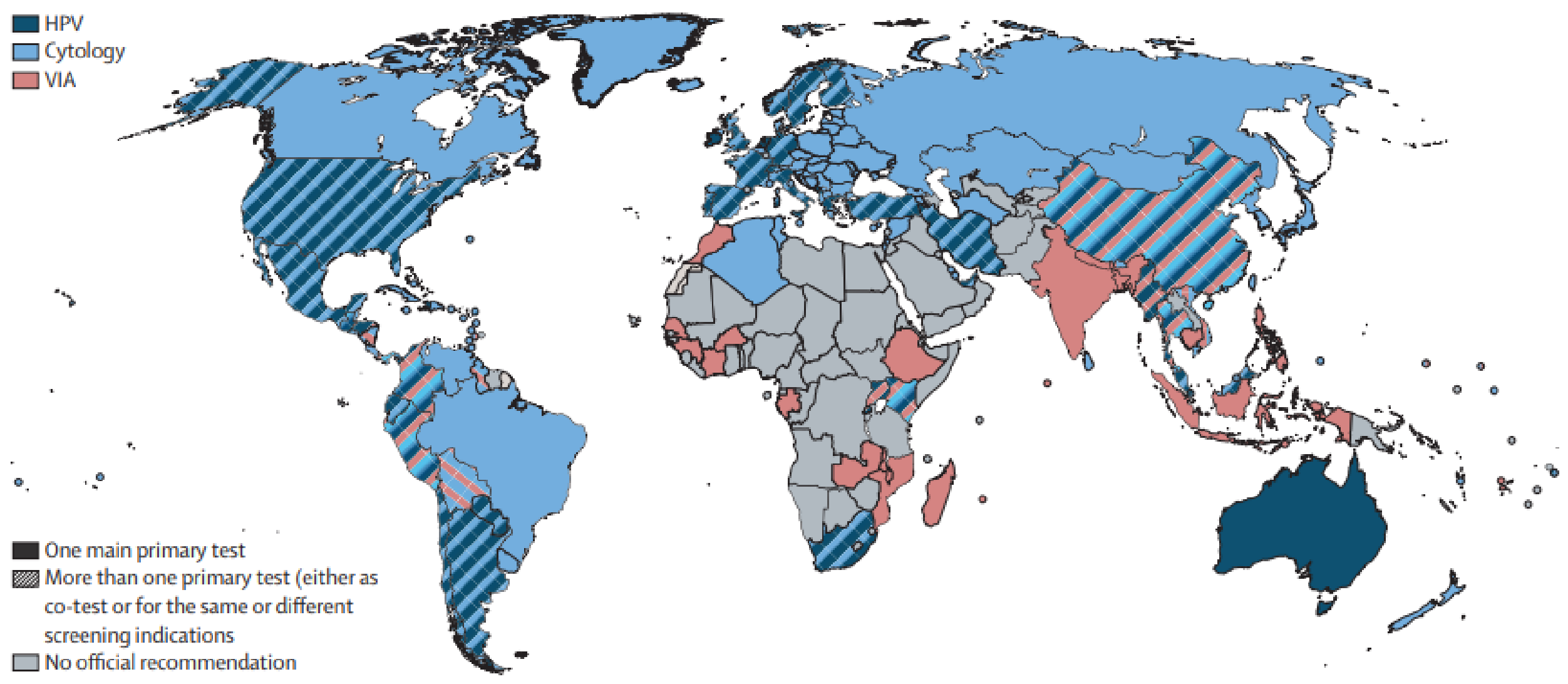
Women waiting for cervical cancer screening, Guinea, India and Nepal

Official recommended tests for primary cervical cancer screening



Bruni L, et al. *Lancet Glob Health*. 2022;10(8):e1115-e1127.

Cervical cancer prevention: HPV vaccination 2- vs 3-dose trial


GOVT. OF GUJARAT

Vaccine efficacy against persistent human papillomavirus (HPV) 16/18 infection at 10 years after one, two, and three doses of quadrivalent HPV vaccine in girls in India: a multicentre, prospective, cohort study

Partha Basu*, Sylla G Malvi, Smita Joshi, Neerja Bhatla, Richard Muwonge, Eric Lucas, Yogesh Verma, Pullikottil O Esmy, Usha Rani Reddy Poli, Anand Shah, Eric Zomawia, Sharmila Pimple, Kasturi Jayant, Sanjay Hingmire, Aruna Chiwate, Uma Dhale, Shachi Vashist, Gaurav Mishra, Radhika Jadhav, Maqsood Siddiqi, Subha Sankaran, Priya Ramesh Prabhu, Thiravlam Pillai Rameshwari Ammal Kannan, Rintu Varghese, Surendra S Shastri, Devasena Anantharaman, Tarik Gheit, Massimo Tommasino, Catherine Sauvaget, M Radhakrishna Pillai, Rengaswamy Sankaranarayanan

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See Comment page 1484

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Summary

Background A randomised trial designed to compare three and two doses of quadrivalent human papillomavirus (HPV) vaccine in adolescent girls in India was converted to a cohort study after suspension of HPV vaccination in trials by the Indian Government. In this Article, the revised aim of the cohort study was to compare vaccine efficacy of single dose to that of three and two doses in protecting against persistent HPV 16 and 18 infection at 10 years post vaccination.

Methods In the randomised trial, unmarried girls aged 10–18 years were recruited from nine centres across India and randomly assigned to either two doses or three doses of the quadrivalent HPV vaccine (Gardasil [Merck Sharp & Dohme, Whitehouse Station, NJ, USA]; 0·5 mL administered intramuscularly). After suspension of recruitment and vaccination, the study became a longitudinal, prospective cohort study by default, and participants were allocated to four cohorts on the basis of the number vaccine doses received per protocol: the two-dose cohort (received vaccine on days 1 and 180 or later), three-dose cohort (days 1, 60, and 180 or later), two-dose default cohort (days 1 and 60 or later), and the single-dose default cohort. Participants were followed up yearly. Cervical specimens were collected from participants 18 months after marriage or 6 months after first childbirth, whichever was earlier, to assess incident and persistent HPV infections. Married participants were screened for cervical cancer as they reached 25 years of age. Unvaccinated women age-matched to the married vaccinated participants were recruited to serve as controls. Vaccine efficacy against persistent HPV 16 and 18 infections (the primary endpoint) was analysed for single-dose recipients and compared with that in two-dose and three-dose recipients after adjusting for imbalance in the distribution of potential confounders between the unvaccinated and vaccinated cohorts. This trial is registered with ISRCTN, ISRCTN98283094, and ClinicalTrials.gov, NCT00923702.

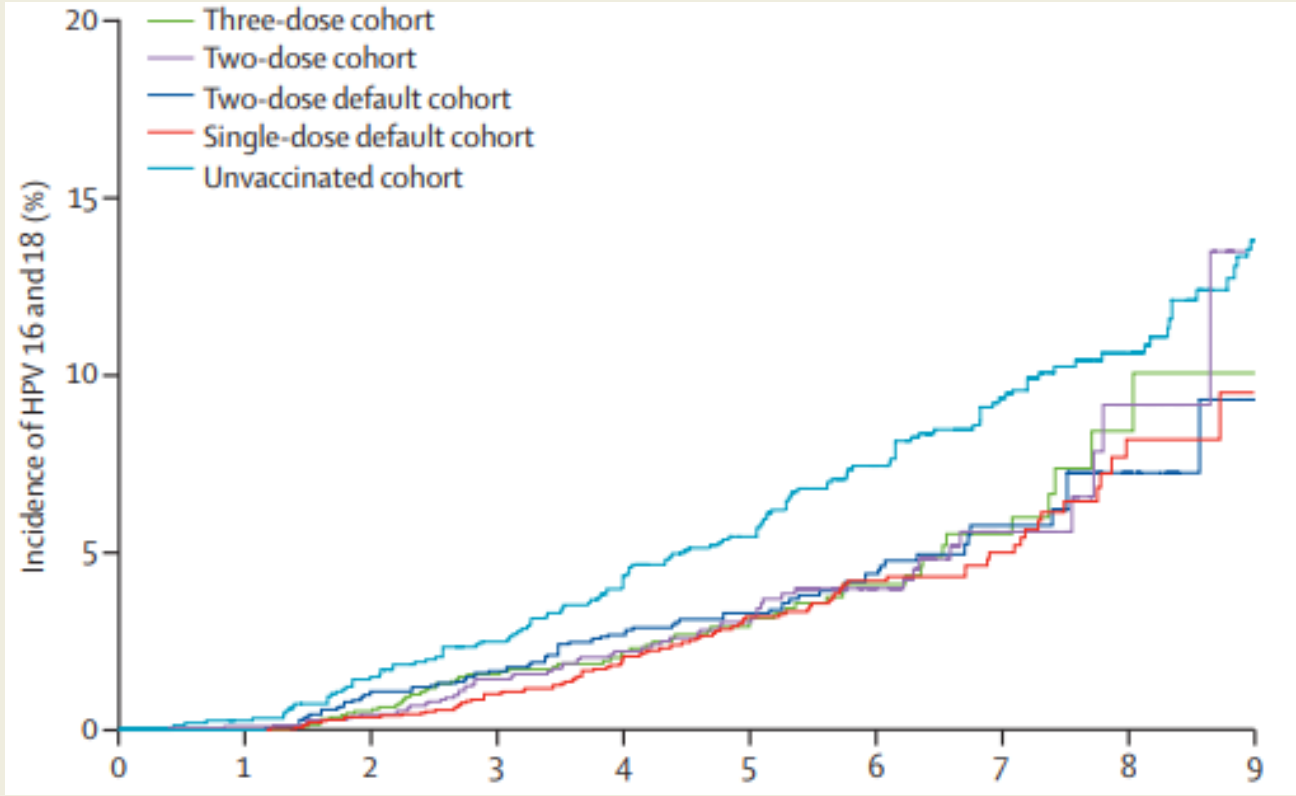
Findings Vaccinated participants were recruited between Sept 1, 2009, and April 8, 2010 (date of vaccination suspension), and followed up over a median duration of 9·0 years (IQR 8·2–9·6). 4348 participants had three doses, 4980 had two doses (0 and 6 months), and 4949 had a single dose. Vaccine efficacy against persistent HPV 16 and 18 infection among participants evaluable for the endpoint was 95·4% (95% CI 85·0–99·9) in the single-dose default cohort (2135 women assessed), 93·1% (77·3–99·8) in the two-dose cohort (1452 women assessed), and 93·3% (77·5–99·7) in three-dose recipients (1460 women assessed).

Interpretation A single dose of HPV vaccine provides similar protection against persistent infection from HPV 16 and 18, the genotypes responsible for nearly 70% of cervical cancers, to that provided by two or three doses.

Funding Bill & Melinda Gates Foundation.

Introduction

A combined strategy of high-coverage human papillomavirus (HPV) vaccination of girls aged 9–14 years, twice-lifetime screening of women at 35 years and 45 years of age, and effective treatment of those with cervical neoplasia can potentially eliminate cervical cancer as a public health problem.[1] The inability of nearly two-thirds of low-income and lower-middle-income countries to



Basu P, et al. *Lancet Oncol*. 2021;22(11):1518-1529.

One-dose Human Papillomavirus (HPV) vaccine offers solid protection against cervical cancer

11 April 2022 | News release | Reading time: 3 min (788 words)

The 4-7 April convening of the WHO Strategic Advisory Group of Experts on Immunization (SAGE) evaluated the evidence that has been emerging over past years that single-dose schedules provide comparable efficacy to the two or three-dose regimens.

SAGE's review concluded that a single-dose Human Papillomavirus (HPV) vaccine delivers solid protection against HPV, the virus that causes cervical cancer, that is comparable to 2-dose schedules. This could be a game-changer for the prevention of the disease; seeing more doses of the life-saving jab reach more girls.

Often referred to as the 'silent killer' and almost entirely preventable, cervical cancer is a disease of inequity of access; the new SAGE recommendation is underpinned by concerns over the slow introduction of the HPV vaccine into immunization programs and overall low population coverage, especially in poorer countries.

More than 95% of cervical cancer is caused by sexually transmitted HPV, which is the fourth most common type of cancer in women globally with 90% of these women living in low- and middle-income countries.

"The HPV vaccine is highly effective for the prevention of HPV serotypes 16 & 18, which cause 70% of cervical cancer," said Dr *Alejandro* Cravioto, *SAGE* Chair. "SAGE urges all countries to introduce HPV vaccines and prioritize multi-age cohort catch up of missed and older cohorts of girls. These recommendations will enable more girls and women to be vaccinated and thus preventing them from having cervical cancer and all its consequences over the course of their lifetimes."

SAGE recommends updating dose schedules for HPV as follows:

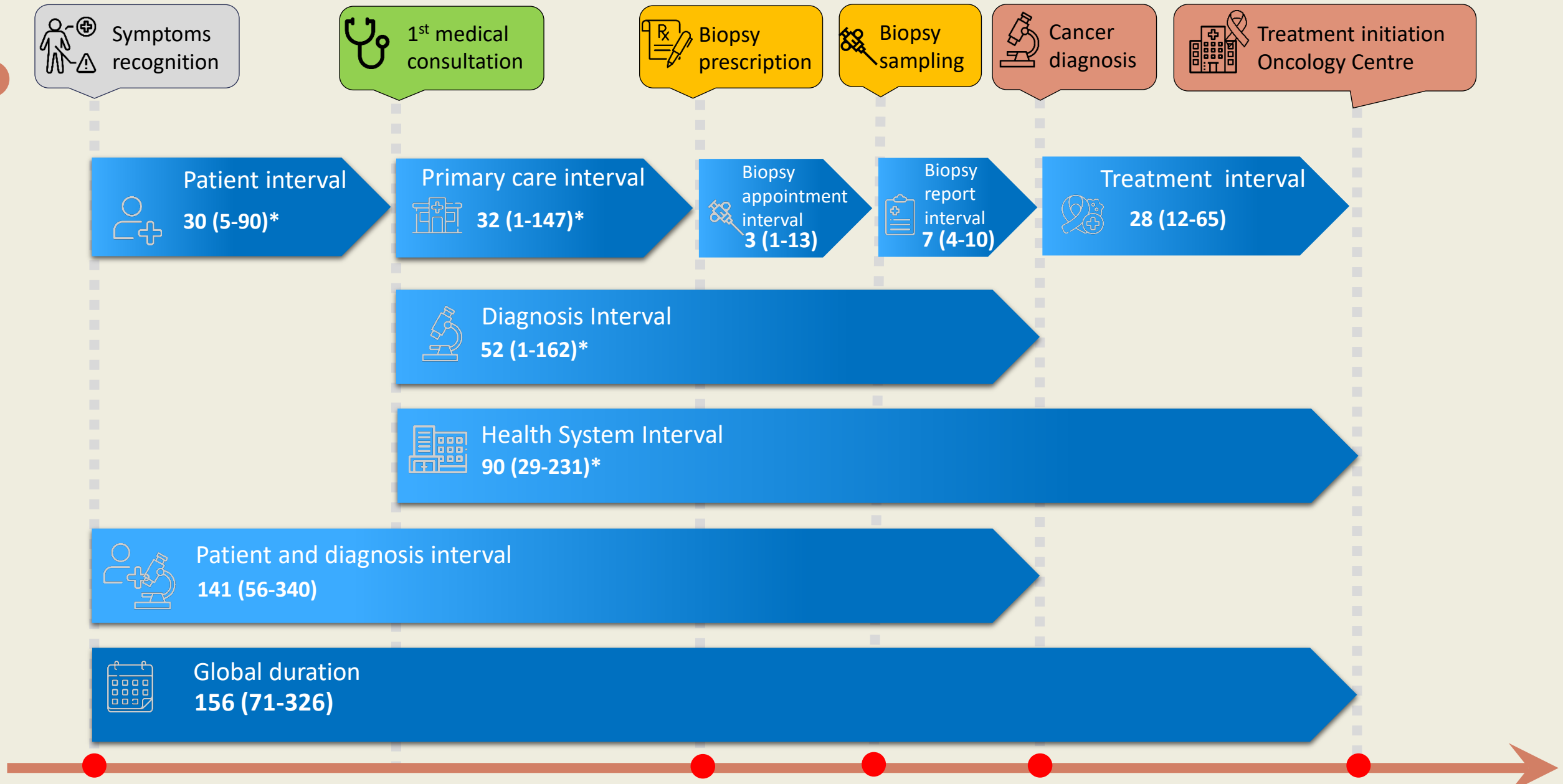
- **one or two-dose schedule** for the primary target of girls aged **9-14**
- **one or two-dose schedule** for young women aged **15-20**
- Two doses with a 6-month interval for women **older than 21**

Immunocompromised individuals, including those with HIV, should receive three doses if feasible, and if not at least two doses. There is limited evidence regarding the efficacy of a single dose in this group.

WHO's recommendations will be updated following further consultation across stakeholders.

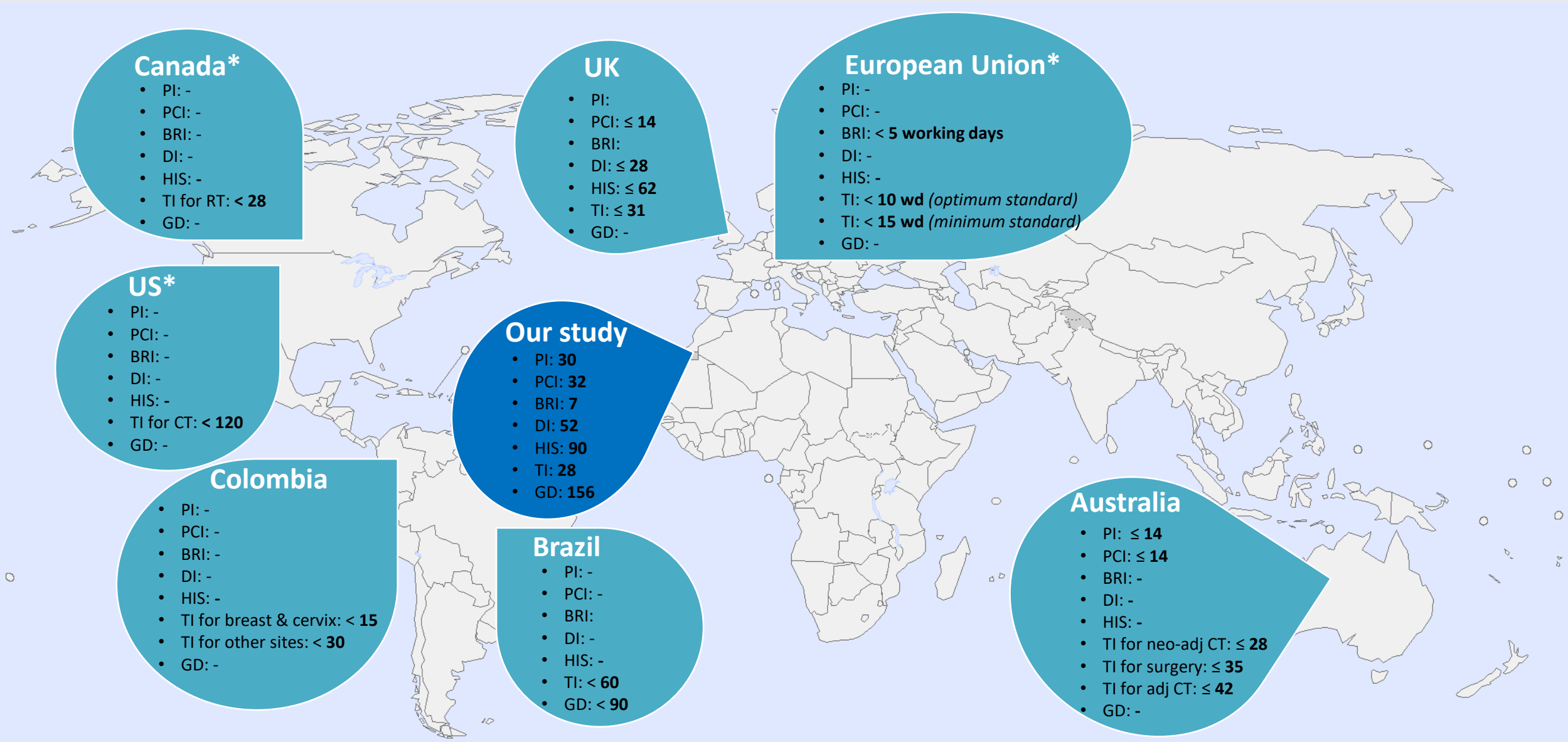
Source: World Health Organization, 2022

Median duration and interquartile range (in days) of the different intervals of a cancer patient's journey



Unpublished data

Comparison of intervals with International Standards or timeframes (in days)



* Timeframe for breast cancer patients; adj: adjuvant; CT: chemotherapy; RT: radiotherapy

PI: Patient interval; PCI: Primary care interval; BRI: Biopsy result interval; DI: Diagnosis interval; HIS: Health services interval; TI: Treatment interval; GD: Global duration

Unpublished data

Thank you for your attention!

International Agency for Research on Cancer

World Health Organization