NHMRC Centre of Research Excellence in Cervical Cancer Control

This is a multi-institutional agreement in partnership with:

The Daffodil Centre | UNSW Kirby Institute | Australian Centre for the Prevention of Cervical Cancer | The University of Melbourne | Australian National University

The Daffodil Centre

The role of epidemiology in cervical cancer elimination

The World Epidemiology Conference
Capetown, South Africa
September 2024

Karen Canfell AC FAHMS

Director, The Daffodil Centre
Professor & NHMRC Leadership Fellow
Faculty of Medicine and Health, The University of Sydney

Cancer Council | The University of Sydney

FIGHTING CANCER TOGETHER

International Cancer Screening Network

Cancer Council | Sydney

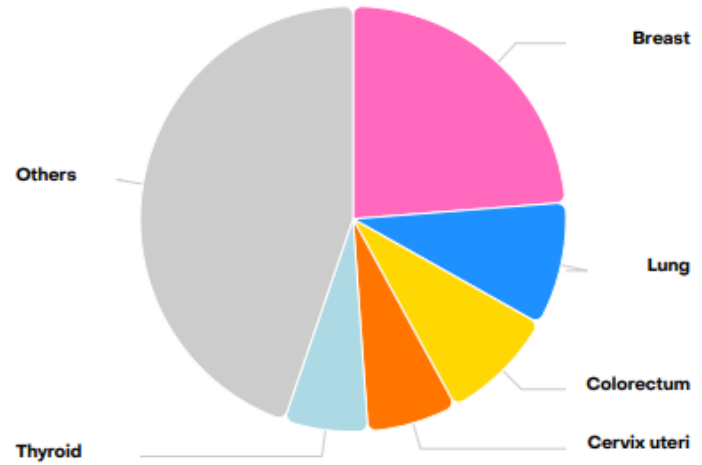
Disclosures

I am co-PI of an investigator-initiated trial of cervical screening, "Compass", run by the Australian Centre for Prevention of Cervical Cancer (ACPCC), which is a government-funded not-for-profit charity. The trial has received support from the Australian government and the ACPCC has received equipment and a funding contribution from Roche Molecular Diagnostics.

I am also co-PI on an implementation program *Elimination of Cervical Cancer in the Western Pacific (ECCWP)/ Elimination Partnership for Cervical Cancer in the Indo-Pacific (EPICC)* which has received support from the Australian government, the Minderoo Foundation and equipment donations from Cepheid Inc.

Cervical cancer:
High burden, immense inequity

Females

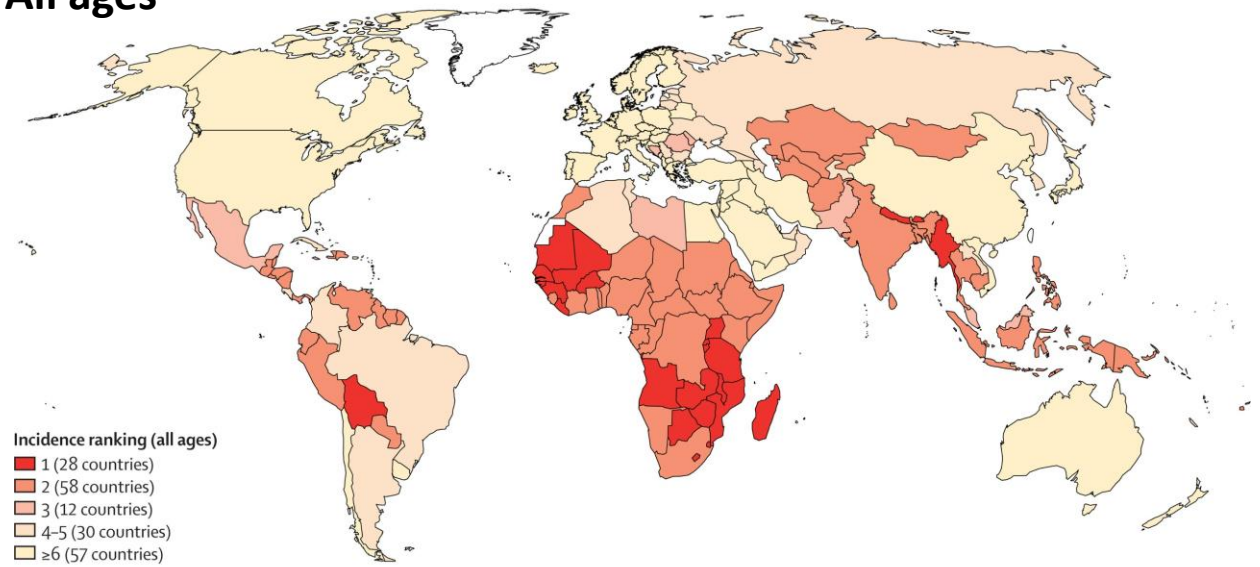


Total: 9 664 889

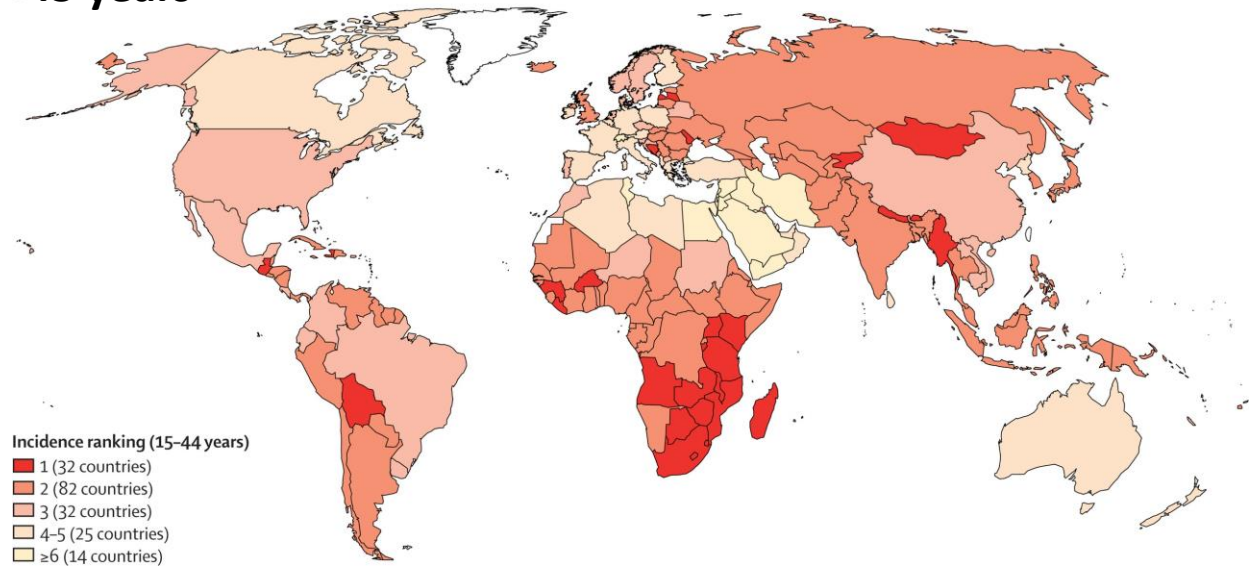
Rank	Cancer site	Number of cases	Percent
1st	Breast	2 296 840	23.8%
2nd	Lung	908 630	9.4%
3rd	Colorectum	856 979	8.9%
4th	Cervix uteri	662 301	6.9%
5th	Thyroid	614 729	6.4%
-	Others	4 325 410	44.8%

Number of new cases in 2022, females, all ages

All ages



⩽45 years



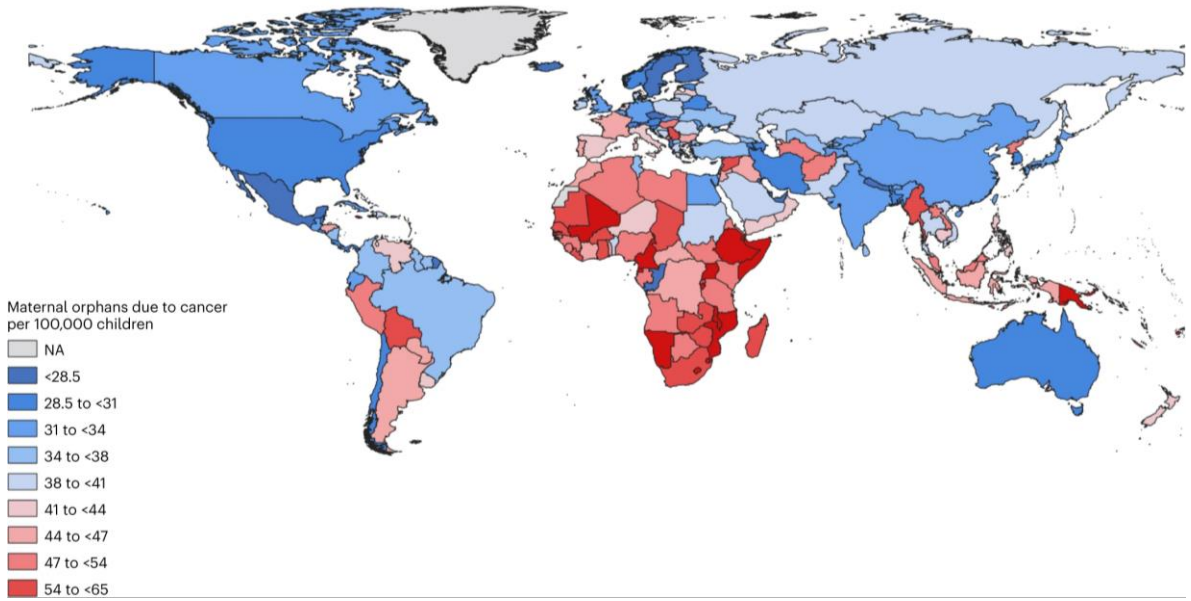
[1]The International Agency for Research on Cancer (IARC), Global Cancer Observatory.

[2] Arbyn M, Weiderpass E, Bruni L, de Sanjose S, Saraiya M, Ferlay J, Bray F, Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis, *Lancet GH* 2019.

There are severe intergenerational consequences

All cancers

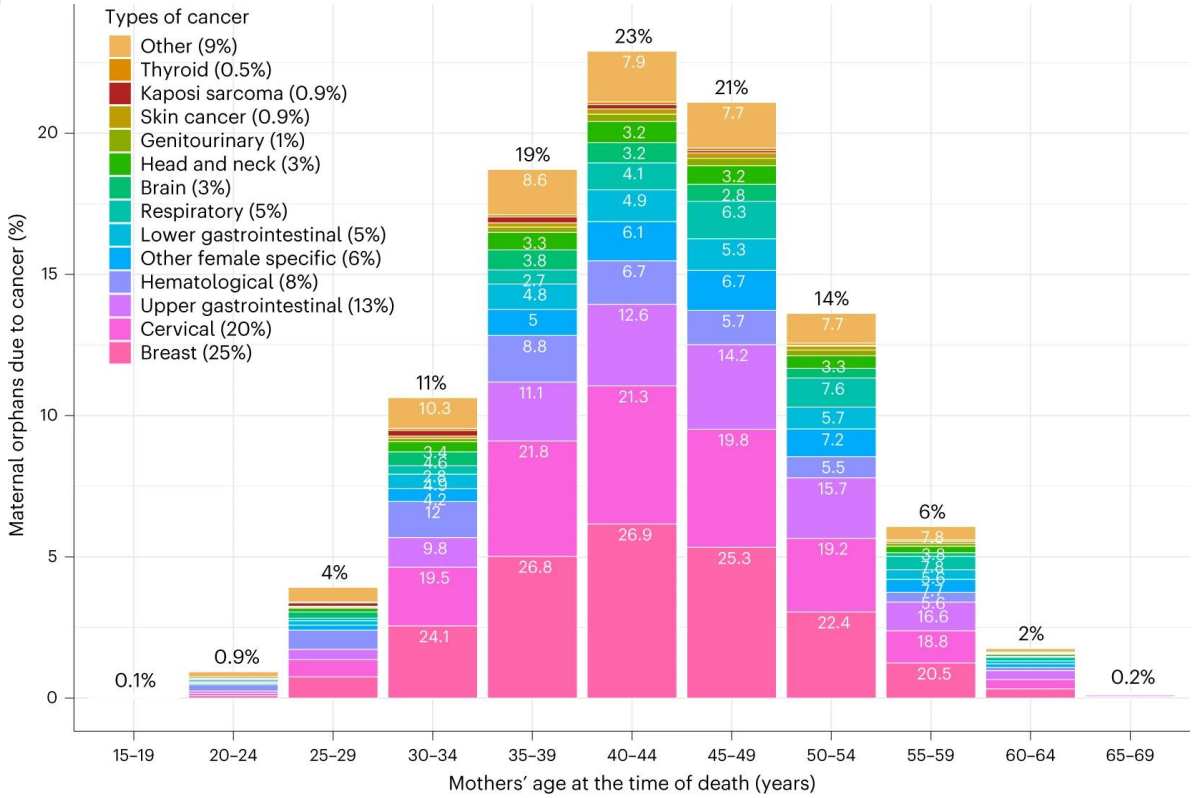
In 2020, 4.4M cancer deaths in women resulted in 1.0M new maternal orphans globally



New maternal orphans due to cancer per 100,000 children in 2020

Cervical cancer

Est. 341,000 cervical cancer deaths, resulting in 210,000 new maternal orphans

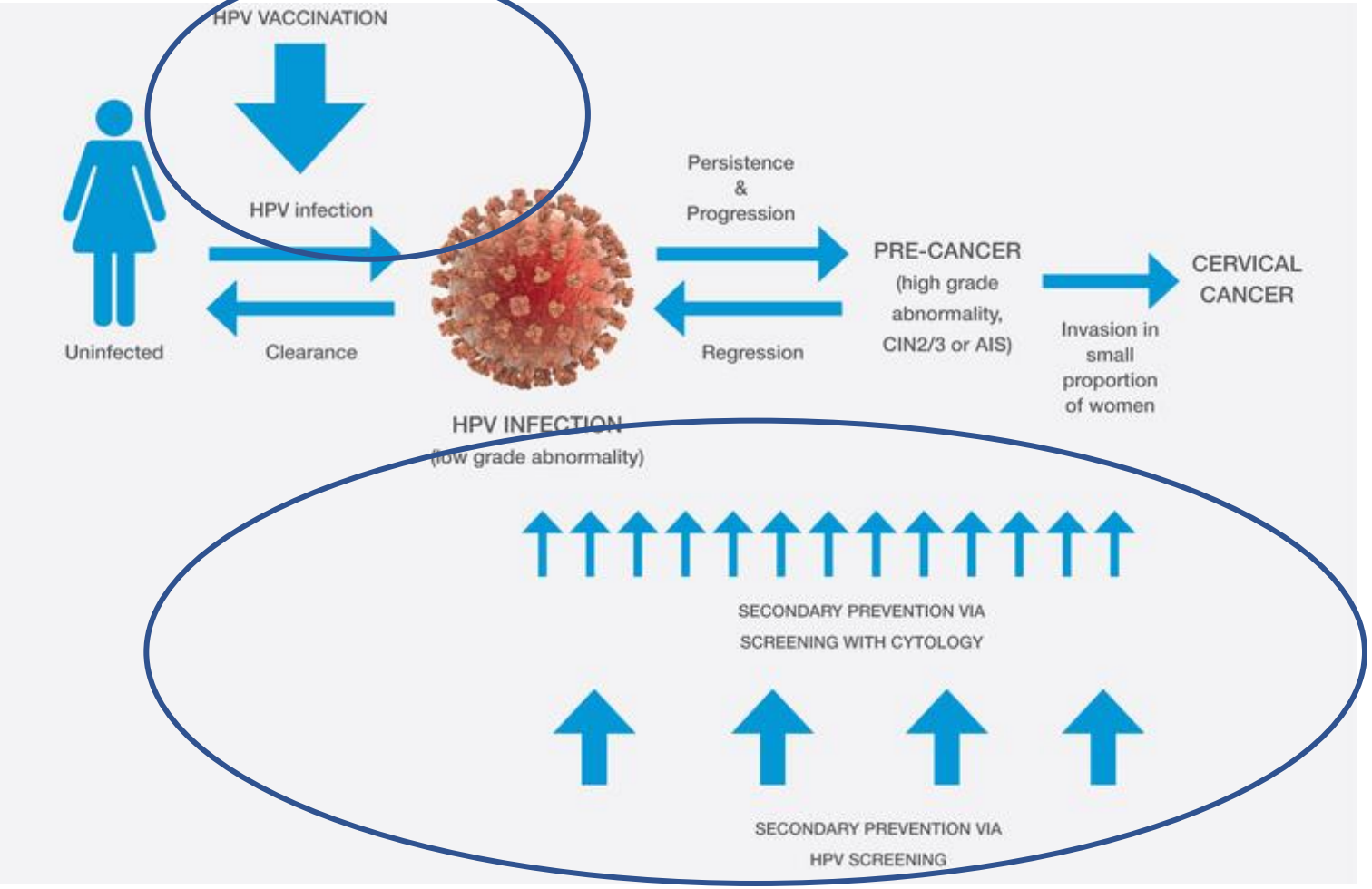


Global distribution of maternal orphans due to cancer by mother's age at time of death and type of cancer

Guida, F, Kidman, R, Ferlay, J. *et al.* Global and regional estimates of orphans attributed to maternal cancer mortality in 2020. *Nat Med* **28**, 2563–2572 (2022).

Natural history of disease, and intervention effectiveness, are well understood

Primary target population: girls aged 9-14 years



Primary target population: Women aged 25-30+ years

National Cervical Screening Guidelines 2017, Australia. Adapted from: Schiffman and Castle, NEJM 2005 The Promise of Global Cervical-Cancer Prevention N Engl J Med 2005; 353:2101-2104.

Viral association with cancer identified

Early ecological analysis

Special Article

CANCER OF THE CERVIX: A SEXUALLY TRANSMITTED INFECTION?

VALERIE BERAL

Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT

Summary When mortality patterns for cancer of the uterine cervix were compared with trends in incidence of sexually transmitted diseases in both England and Wales and in Scotland, there were striking associations between the temporal, social class, occupational, and geographic distributions of these diseases. The data suggest that exposure to sexually transmitted infection is an important determinant of cervical cancer. Although they are still young, women born after 1940 are already experiencing increased cervical-cancer mortality. If cervical-cancer prevention and therapy remain unchanged, this generation's high risk of death from cervical cancer will probably continue to operate throughout their lives.

Beral V, *Lancet* 1974

Identification of HPV DNA in CaCx

A papillomavirus DNA from a cervical carcinoma and its prevalence in cancer biopsy samples from different geographic regions

(human papillomaviruses/low-stringency hybridization/molecular cloning/genital tumors)

MATTHIAS DÜRST, LUTZ GISSMANN, HANS IKENBERG, AND HARALD ZUR HAUSEN*

Institut für Virologie, Zentrum für Hygiene, Universität Freiburg, Hermann-Herder-Strasse 11, 7800 Freiburg, Federal Republic of Germany

Communicated by Gertrude Henle, March 21, 1983

"DNA from one biopsy sample of invasive cancer of the cervix ….showed no homology with DNA of other human HPV types. We therefore propose to designate it tentatively as HPV 16."

Durst M et al., PNAS USA 1983

Attributable fraction of HPV types in cervical cancer now well quantified

HPV type	HPV species	IARC Group[a]	% HPV type prevalence in cancer	% HPV type prevalence in normal	Odds ratio	% Attributable (etiological) fraction
HPV16	**α-9**	**Group 1**	**55.8**	**2.6**	**47.6**	**62.4**
HPV18	**α-7**	**Group 1**	**14.3**	**1**	**15.7**	**15.3**
HPV45	**α-7**	**Group 1**	**4.8**	**0.6**	**8.3**	**4.8**
HPV33	**α-9**	**Group 1**	**4**	**0.6**	**7.1**	**3.9**
HPV58	**α-9**	**Group 1**	**4**	**0.8**	**5.1**	**3.7**
HPV31	**α-9**	**Group 1**	**3.5**	**1**	**3.7**	**2.9**
HPV52	**α-9**	**Group 1**	**3.2**	**1**	**3.3**	**2.6**
HPV35	**α-9**	**Group 1**	**1.6**	**0.4**	**3.9**	**1.4**
HPV59	**α-7**	**Group 1**	**1.2**	**0.4**	**2.9**	**0.9**
HPV39	**α-7**	**Group 1**	**1.3**	**0.6**	**2.0**	**0.8**
HPV68	**α-7**	**Group 2A**	**0.6**	**0.4**	**1.5**	**0.2**
HPV51	**α-5**	**Group 1**	**1**	**0.9**	**1.2**	**0.2**
HPV56	**α-6**	**Group 1**	**0.8**	**0.6**	**1.3**	**0.2**
HPV73	α-11	Group 2B	0.5	0.3	1.8	0.2
HPV26	α-5	Group 2B	0.2	0.1	4.1	0.2
HPV30	α-6	Group 2B	0.2	0.1	2.6	0.1
HPV69	α-5	Group 2B	0.2	0.1	1.4	0.1
HPV67	α-9	Group 2B	0.3	0.2	1.2	< 0.1
HPV82	α-5	Group 2B	0.2	0.1	1.2	< 0.1
HPV34	α-11	Group 2B	0.1	0.1	1.0	Not attributable
HPV66	**α-6**	**Group 2B**	**0.3**	**0.6**	**0.4**	**Not attributable**
HPV70	α-7	Group 2B	0.2	0.8	0.3	Not attributable
HPV53	α-6	Group 2B	0.5	1.1	0.4	Not attributable

Types in first gen vaccines, AF>70%

Additional types in second gen vaccines, AF > 90%

Types commonly included in current assays in bold

Combes, Clifford et al., Int J Cancer 2015
IARC Handbooks: Cervical Cancer Screening 2022.
https://publications.iarc.fr/Book-And-Report-Series/Iarc-Handbooks-Of-Cancer-Prevention/Cervical-Cancer-Screening-2022

Real-world data on HPV vaccine efficacy has emerged

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

HPV Vaccination and the Risk of Invasive Cervical Cancer

Jiayao Lei, Ph.D., Alexander Ploner, Ph.D., K. Miriam Elfström, Ph.D., Jiangrong Wang, Ph.D., Adam Roth, M.D., Ph.D., Fang Fang, M.D., Ph.D., Karin Sundström, M.D., Ph.D., Joakim Dillner, M.D., Ph.D., and Pär Sparén, Ph.D.

ABSTRACT

IRR for invasive cancer:

- ***0.12 (95%CI:0.00-0.34) among women who had been vaccinated before the age of 17 years***
- ***0.47 (95%CI:0.27-0.75) among women who had been vaccinated at the age of 17 to 30 years***

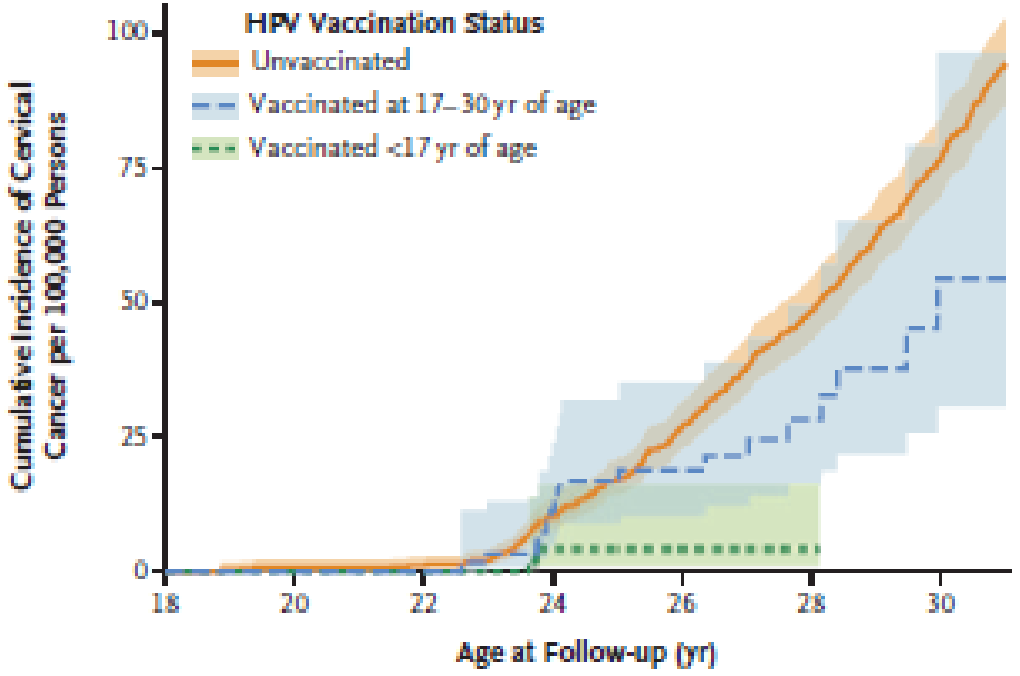


Figure 2. Cumulative Incidence of Invasive Cervical Cancer According to HPV Vaccination Status.

Age at follow-up is truncated in the graph because no cases of cervical cancer were observed in girls younger than 18 years of age.

Lei J, Ploner, Elfström M, Wang J, Roth A, Fang F, Sundström K, Dillner J, Sparén P. HPV Vaccination and the Risk of Invasive Cervical Cancer. N Engl J Med 2020; 383:1340-1348.

Meta-analysis of cross-sectional data and pooled analysis of trial data on HPV vs. cytology screening

Human papillomavirus (HPV) compared to Papanicolaou (Pap) test for detection of cervical intraepithelial neoplasia (CIN 2+) in asymptomatic women

Patient or population: adult asymptomatic women

Settings: outpatient screening programmes

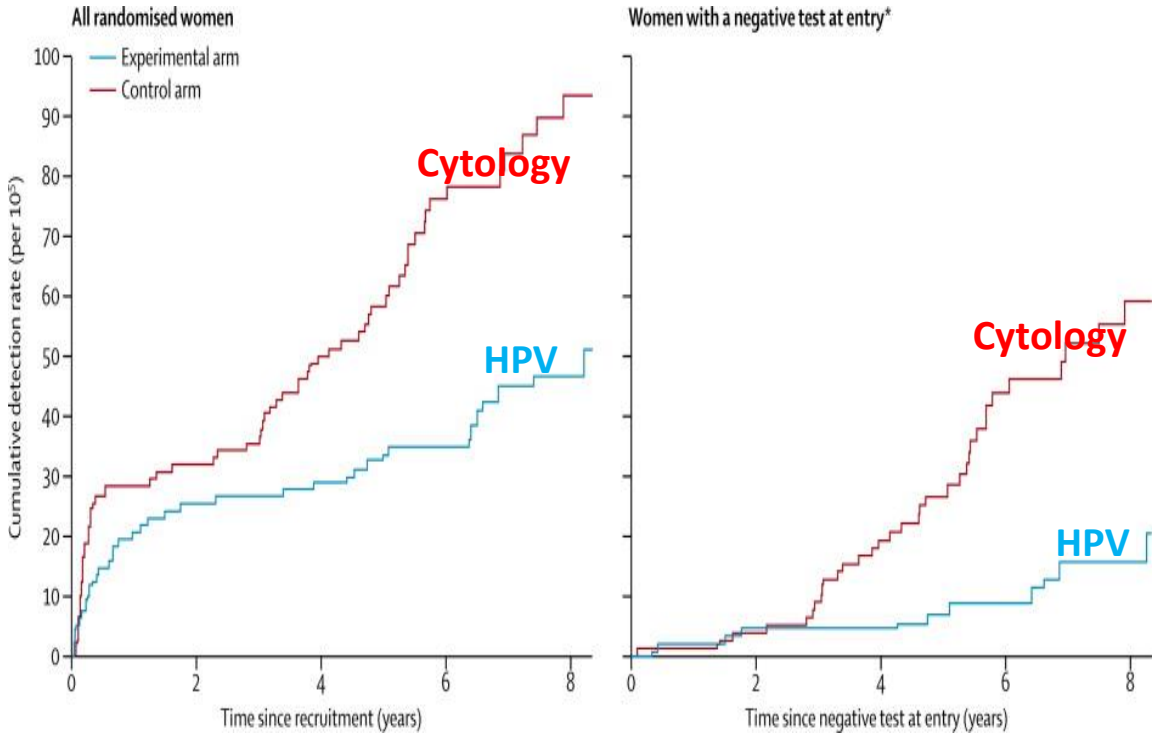
New Test: HPV, HC2 test **Cut-off value:** 1 pg/mL

Comparison Test: Pap, liquid-based cytology (LBC) test **Cut-off value:** atypical squamous cells of undetermined significance (ASCUS)

Reference Test: a colposcopy exam with or without biopsy as clinically indicated

HPV	138,230 women (25 studies)	**Pooled sensitivity (95% CI)**	89.9% (88.6 to 91.1%)	**Pooled specificity (95% CI)**	89.9% (89.7 to 90.0%)
Pap	82,003 women (15 studies)	**Pooled sensitivity (95% CI)**	72.9% (70.7 to 75%)	**Pooled specificity (95% CI)**	90.3% (90.1 to 90.5%)

Koliopoulos G, Nyaga VN, Santesso N, Bryant A, Martin-Hirsch PP, Mustafa RA, Schünemann H, Paraskevaidis E, Arbyn M. Cytology versus HPV testing for cervical cancer screening in the general population. Cochrane Database Syst Rev. 2017.



Ronco G, Dillner J, Elfström KM, Tunesi S, Snijders PJ, Arbyn M, Kitchener H, Segnan N, Gilham C, Giorgi-Rossi P, Berkhof J, Peto J, Meijer CJ; International HPV screening working group. Efficacy of HPV-based screening for prevention of invasive cervical cancer: follow-up of four European randomised controlled trials. Lancet. 2014

Updated systematic review of observational data and trials

The NEW ENGLAND JOURNAL of MEDICINE

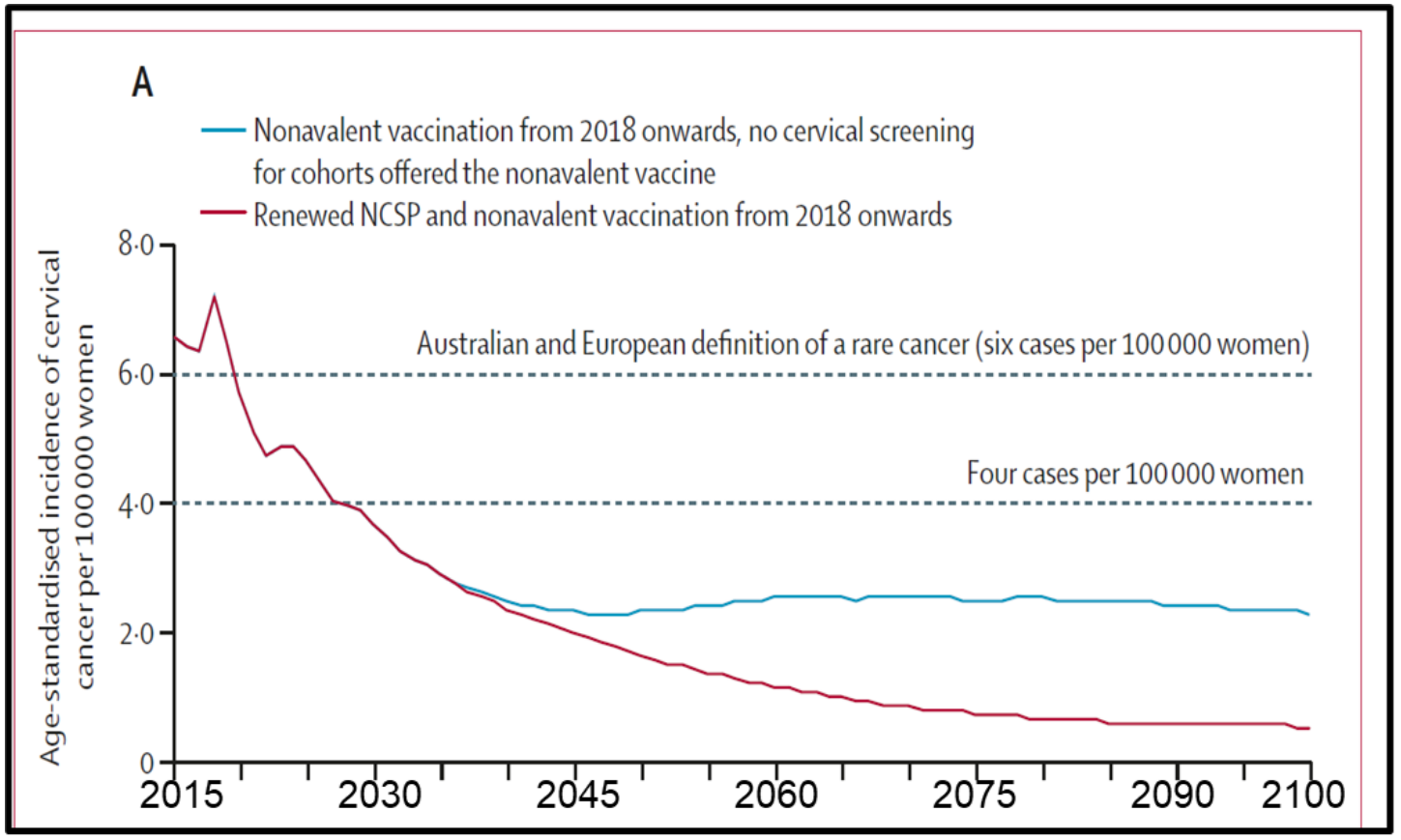
SPECIAL REPORT

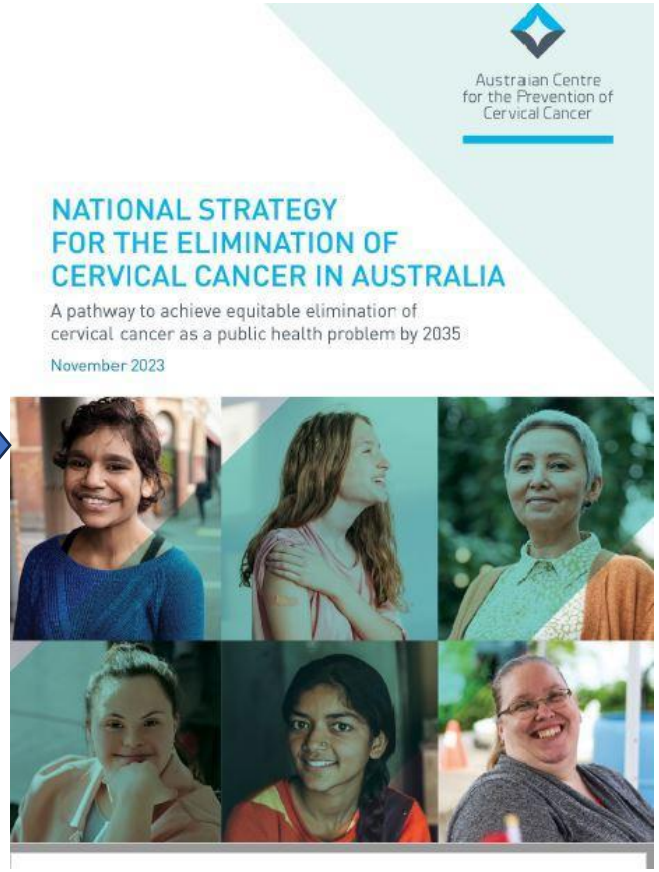
The IARC Perspective on Cervical Cancer Screening

Véronique Bouvard, Ph.D., Nicolas Wentzensen, M.D., Ph.D., Anne Mackie, M.B., B.S., Johannes Berkhof, Ph.D., Julia Brotherton, M.D., Ph.D., Paolo Giorgi-Rossi, Ph.D., Rachel Kupets, M.D., Robert Smith, Ph.D., Silvina Arrossi, Ph.D., Karima Bendahhou, M.D., M.P.H., Karen Canfell, D.Phil., F.A.H.M.S., Z. Mike Chirenje, M.D., Michael H. Chung, M.D., M.P.H., Marta del Pino, M.D., Ph.D., Silvia de Sanjosé, M.D., Ph.D., Miriam Elfström, Ph.D., Eduardo L. Franco, M.P.H., Dr.P.H., Chisato Hamashima, M.D., Dr.Med.Sc., Françoise F. Hamers, M.D., Ph.D., M.P.H., C. Simon Herrington, D.Phil., F.R.C.P., F.R.C.P.E., F.R.C.Path., Raúl Murillo, M.D., M.P.H., Suleeporn Sangrajrang, Ph.D., Rengaswamy Sankaranarayanan, M.D., Mona Saraiya, M.D., M.P.H., Mark Schiffman, M.D., M.P.H., Fanghui Zhao, M.D., Ph.D., Marc Arbyn, M.D., Ph.D., Walter Prendiville, F.R.C.O.G., Blanca I. Indave Ruiz, M.D., Ph.D., M.P.H., Isabel Mosquera-Metcalfe, Ph.D., and Béatrice Lauby-Secretan, Ph.D.

Bouvard et al., NEJM 2022

Understanding the prospects for combining interventions: population-level modelling, Australia





Hall MT, Simms KT, Lew JB, Smith MA, Brotherton JM, Saville M, Frazer I, Canfell K, The projected timeframe until cervical cancer elimination in Australia: a modelling study. Lancet Public Health. 2019.

The WHO global strategy

The three pillars of cervical cancer control

WHO 2030 targets

Vaccination	Screening	Treatment
90% of girls fully vaccinated by age 15	70% of women HPV screened at 35 and 45	90% of women identified with precancer or cervical cancer treated

Cervical cancer threshold for elimination as a public health problem: 4 cervical cancer cases per 100,000 women per annum

RoI

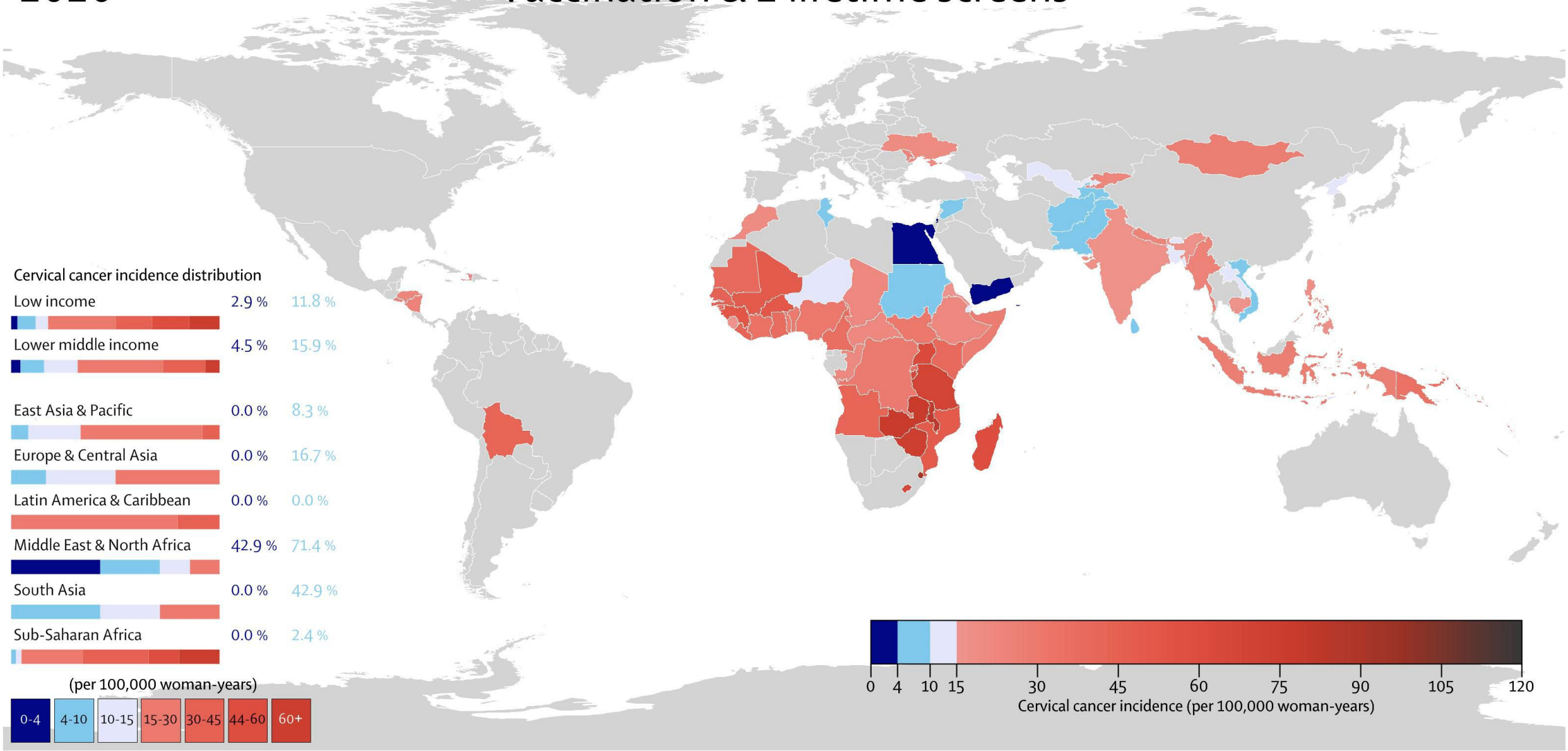
US $3.20 returned to the economy for every dollar invested through 2050 and beyond.

The figure rises to US $26.00 when the benefits of women's improved health on families, communities, and societies are considered.

World Health Organisation. Global strategy towards eliminating cervical cancer as a public health problem, November 2020.

2020 Vaccination & 2 lifetime screens

CCEMC modelling across 78 LMIC

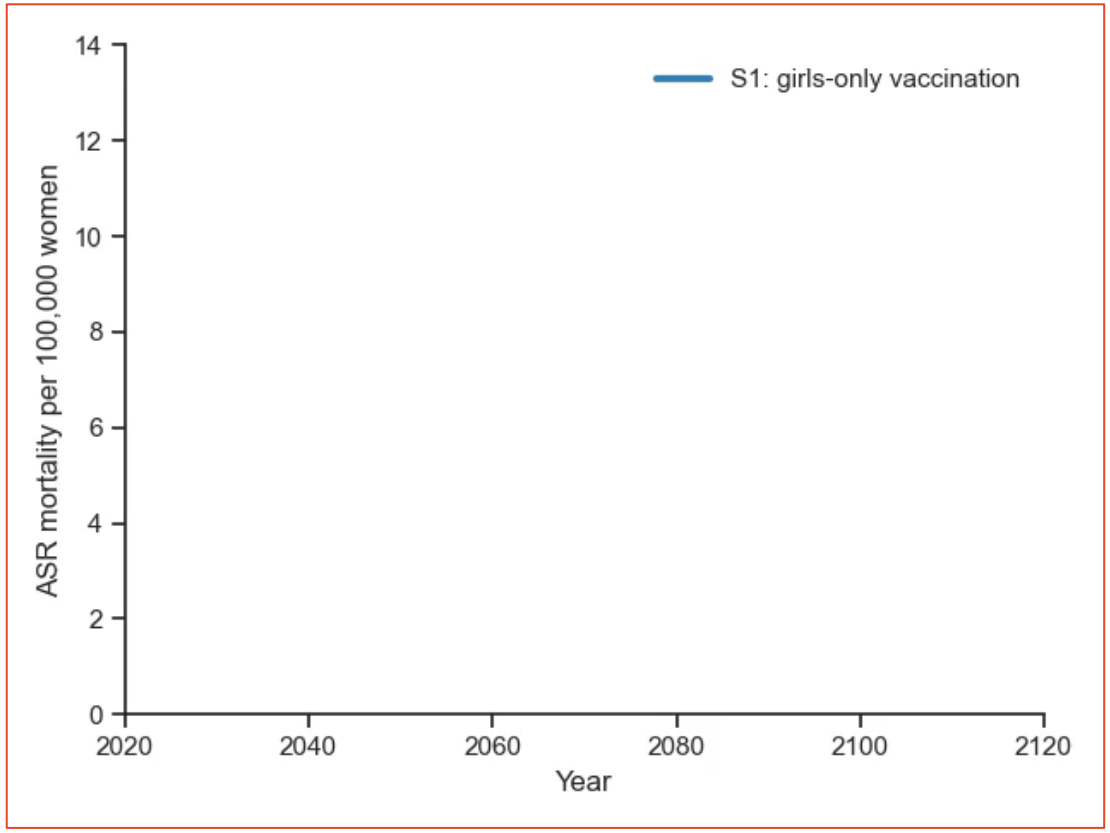


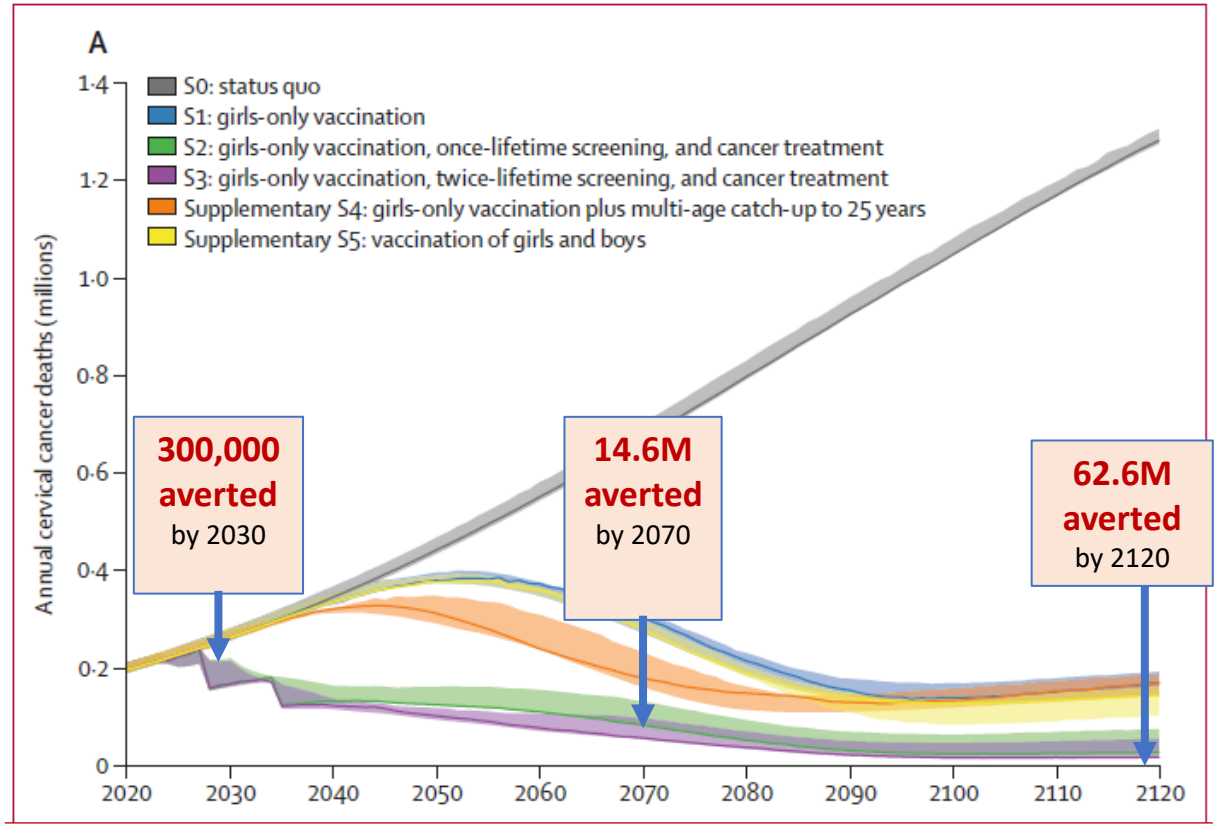
World Health Organization | International Agency for Research on Cancer | World Health Organization | The Daffodil Centre | HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH | UNIVERSITÉ LAVAL

Brisson M,* Kim JJ,* Canfell K,* Drolet M, Gingras G, Burger EA, Martin D, Simms KT, Bénard É, Boily MC, Sy S, Regan C, Keane A, Caruana M, Nguyen DTN, Smith MA, Laprise JF, Jit M, Alary M, Bray F, Fidarova E, Elsheikh F, Bloem PJN, Broutet N, Hutubessy R. Lancet Jan 30 2020.

The elimination strategy emphasises acting immediately on three fronts

CCEMC modelling across 78 LMIC





Canfell K/Kim JJ/Brisson M et al., Mortality impact of achieving WHO cervical cancer elimination targets: a comparative modelling analysis in 78 low-income and lower-middle-income countries *Lancet* Jan 30 2020

Regional-level impact

- Over the next 10 years, about half (48%) of cervical cancer deaths averted in LMIC would be in ***Sub-Saharan Africa*** and almost a third (32%) would be in ***South Asia*** (including India, Afghanistan, Bangladesh, Bhutan, Nepal, Pakistan, Sri Lanka).
- Over the next century, almost 90% of deaths averted would be in these two regions.

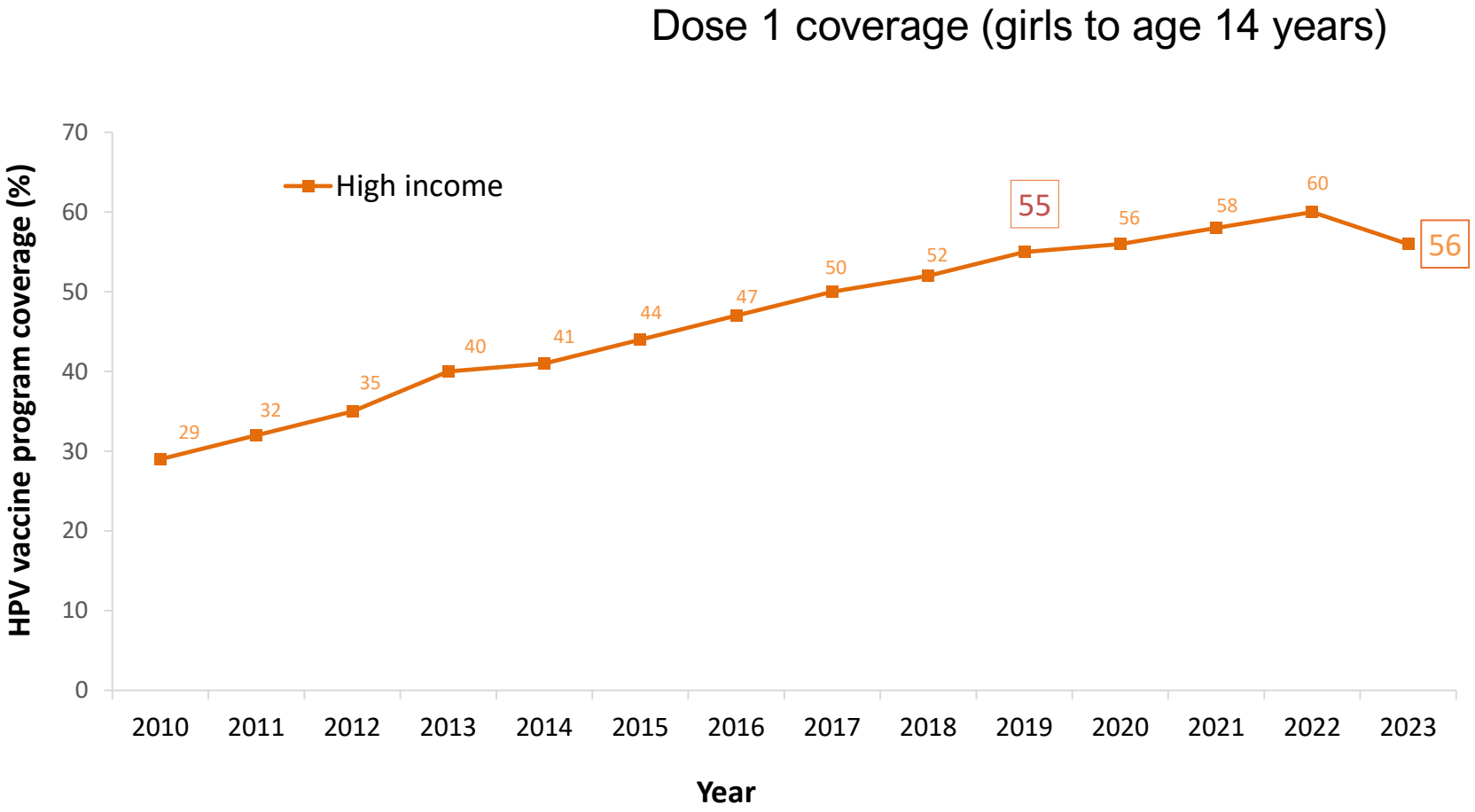
Averted deaths by region, over 10, 50 &100 year periods

	All 78 LMICs	East Asia & Pacific	Europe & Central Asia	Latin America & Caribbean	Middle East & North Africa	South Asia	Sub-Saharan Africa
By 2030 (2020-2030)	0.3 (0.3-0.4)	0.0 (0.0-0.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.1 (0.1-0.1)	0.1 (0.1-0.2)
% of averted deaths in All-78 LMICs	-	16% (13-18%)	0% (0-1%)	1% (1-1%)	3% (1-3%)	32% (29-34%)	48% (45-55%)
By 2070 (2020-2070)	14.6 (14.1-14.6)	1.8 (1.6-1.8)	0.1 (0.1-0.1)	0.2 (0.2-0.2)	0.2 (0.2-0.3)	4.2 (3.9-4.4)	8.0 (7.9-8.1)
% of averted deaths in All-78 LMICs	-	12% (11-13%)	1% (1-1%)	1% (1-1%)	2% (1-2%)	29% (28-30%)	55% (54-57%)
By 2120 (2020-2120)	62.6 (62.1-62.8)	5.3 (4.9-5.4)	0.3 (0.3-0.3)	0.5 (0.5-0.5)	0.8 (0.7-0.9)	12.4 (11.8-12.7)	43.5 (43.0-43.7)
% of averted deaths in All-78 LMICs	-	9% (8-9%)	1% (0-1%)	1% (1-1%)	1% (1-1%)	20% (19-20%)*	69% (69-70%)*

Canfell K/Kim JJ/Brisson M et al., Mortality impact of achieving WHO cervical cancer elimination targets: a comparative modelling analysis in 78 low-income and lower-middle-income countries *Lancet* Jan 30 2020

Implementation:
The next challenge

HPV vaccination coverage by country income category



The Daffodil Centre

Prepared by Diep Noc Nguyen. Data source: WHO HPV dashboard.
Acknowledgment: Hiroki Akaba.

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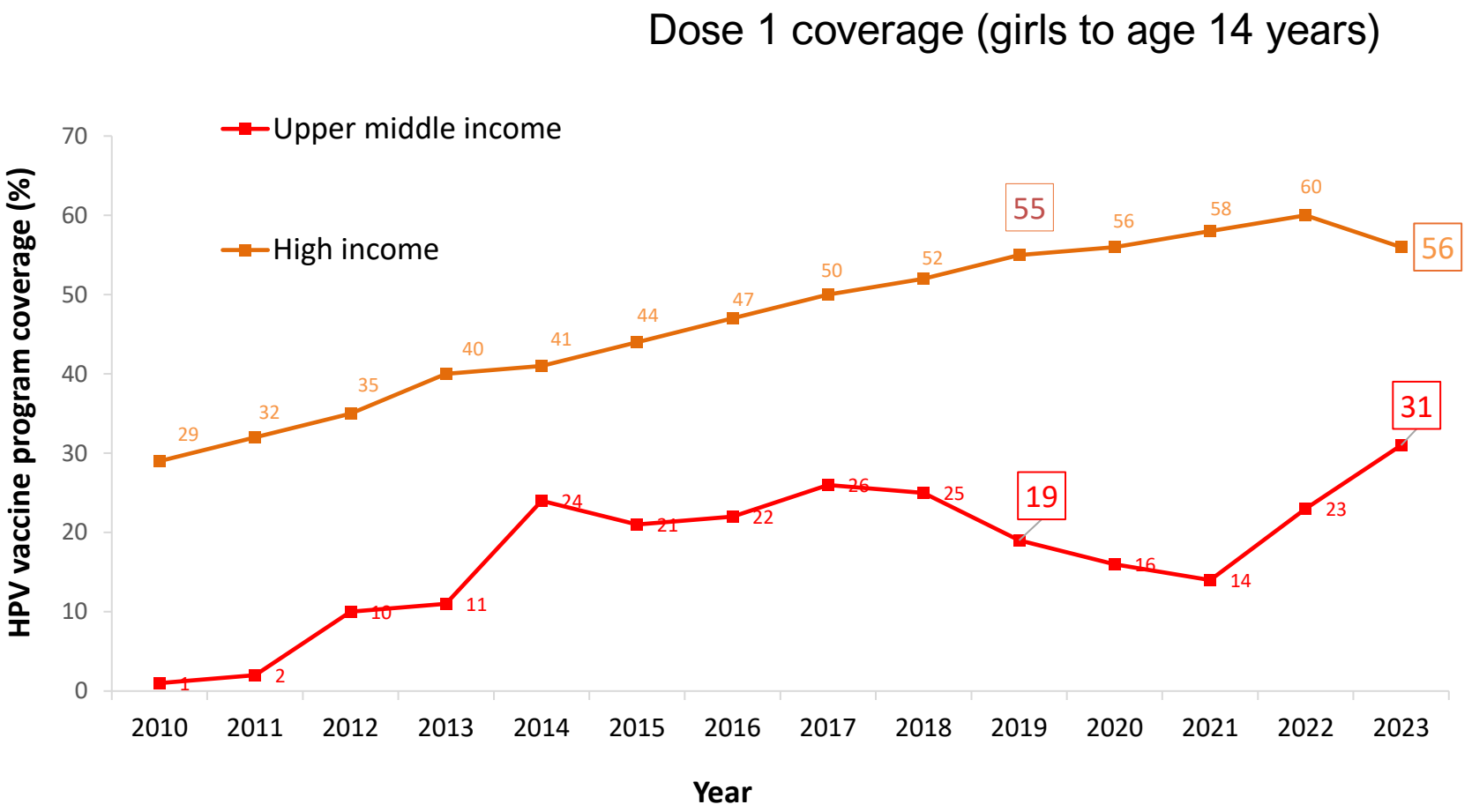
HPV vaccination coverage by country income category



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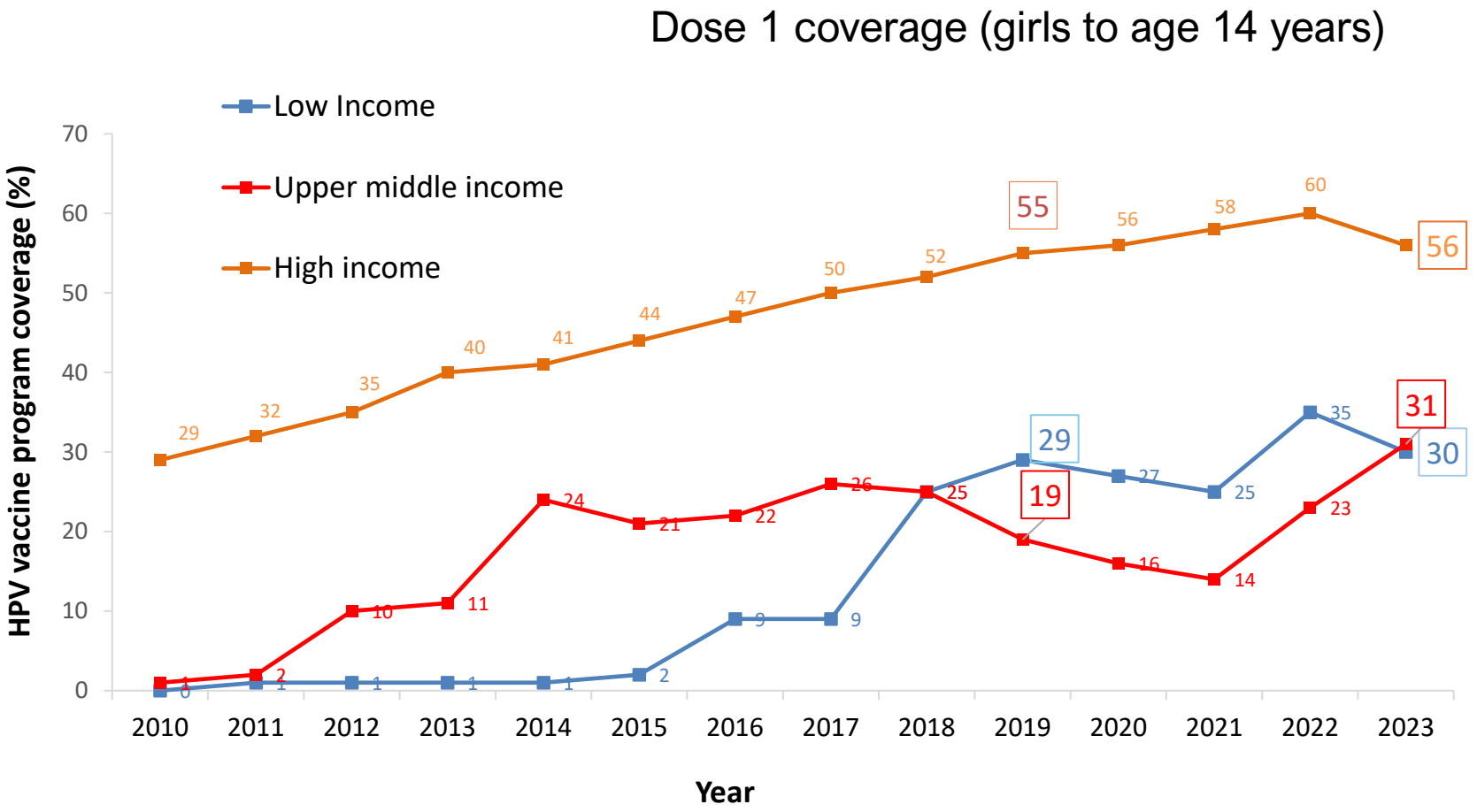

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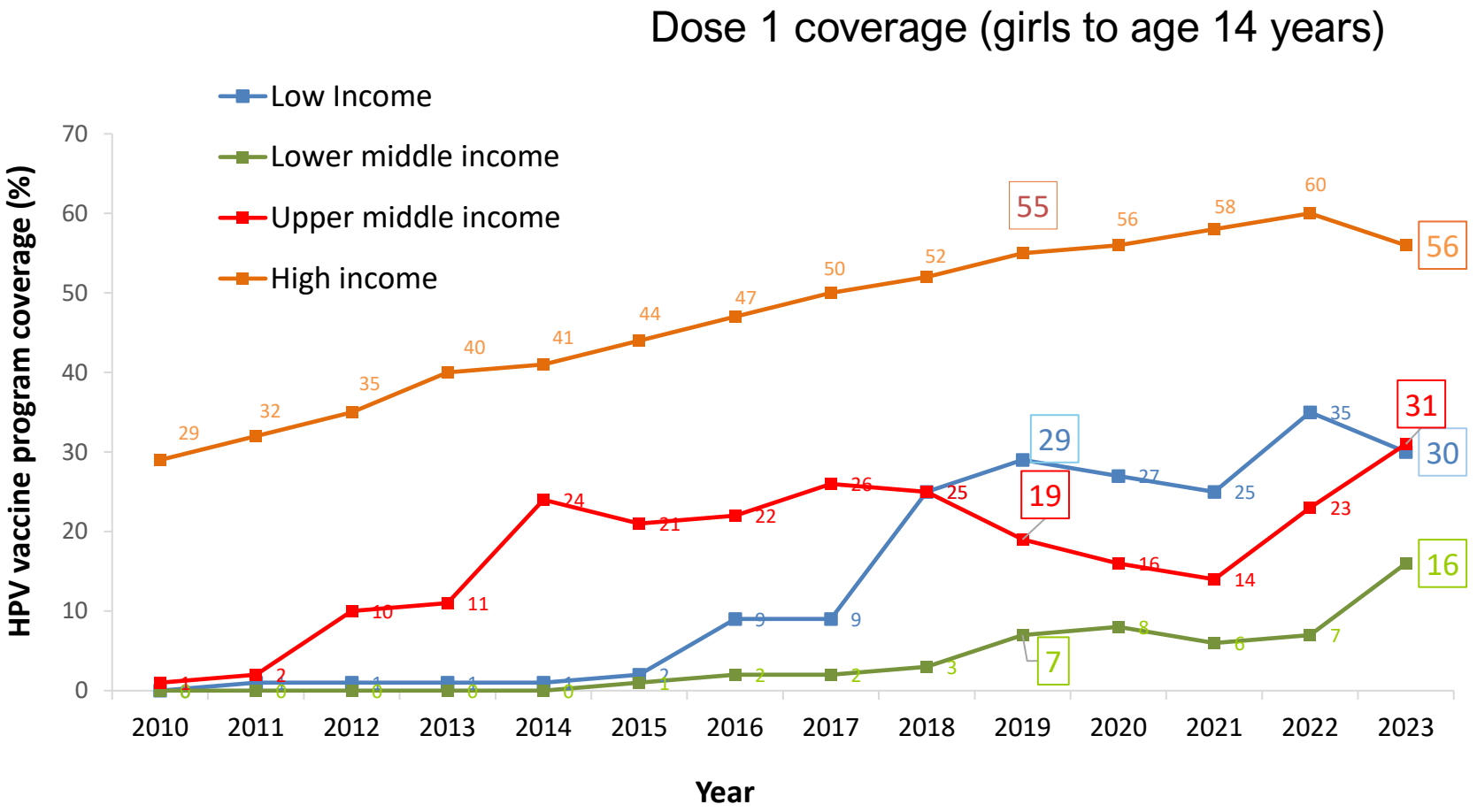
HPV vaccination coverage by country income category



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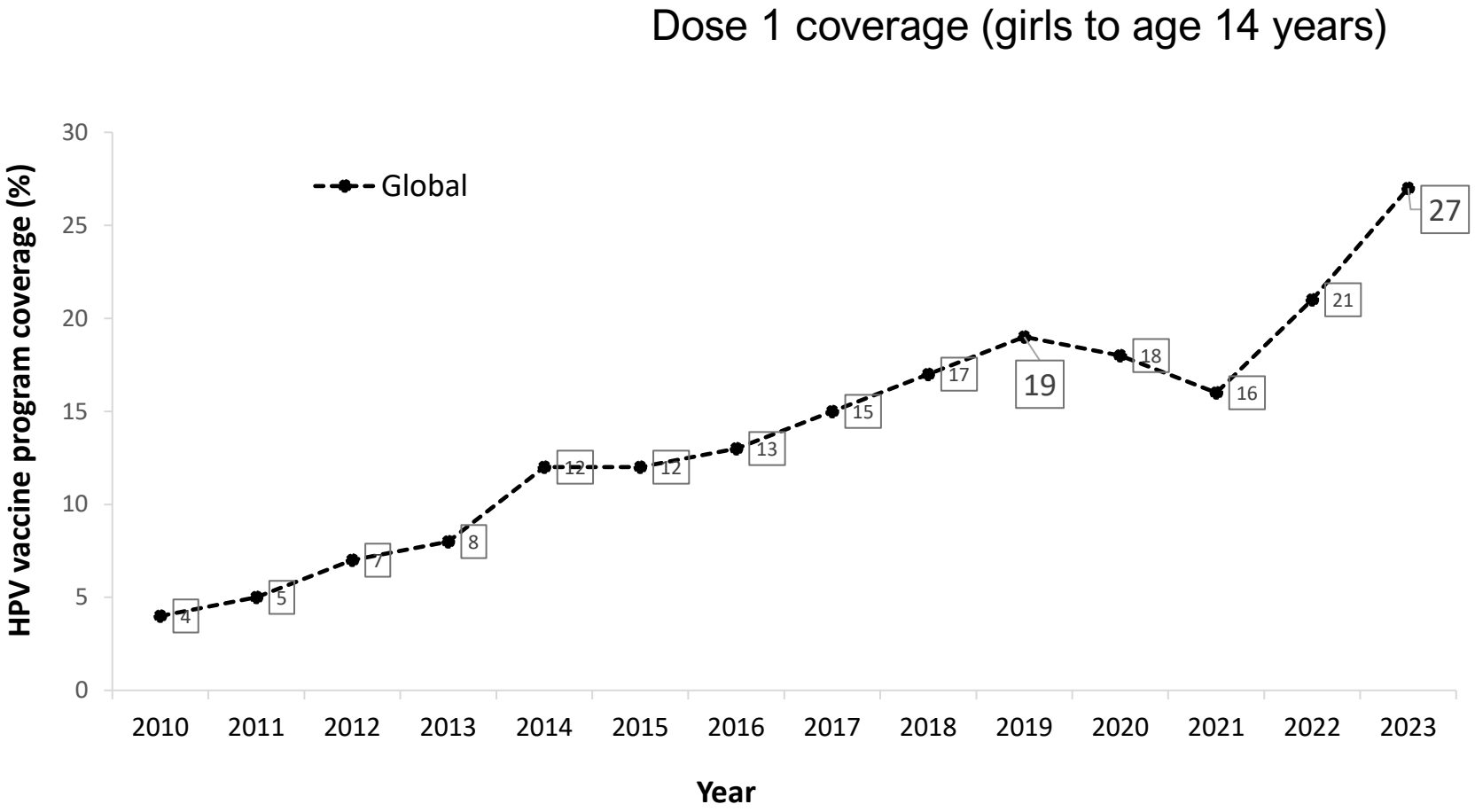
HPV vaccination coverage by country income category



Global coverage dipped during the COVID-19 crisis but has recovered and increased overall:

From 19% in 2019 to 27% in 2023

The Daffodil Centre

Prepared by Diep Noc Nguyen. Data source: WHO HPV dashboard.
Acknowledgment: Hiroki Akaba.

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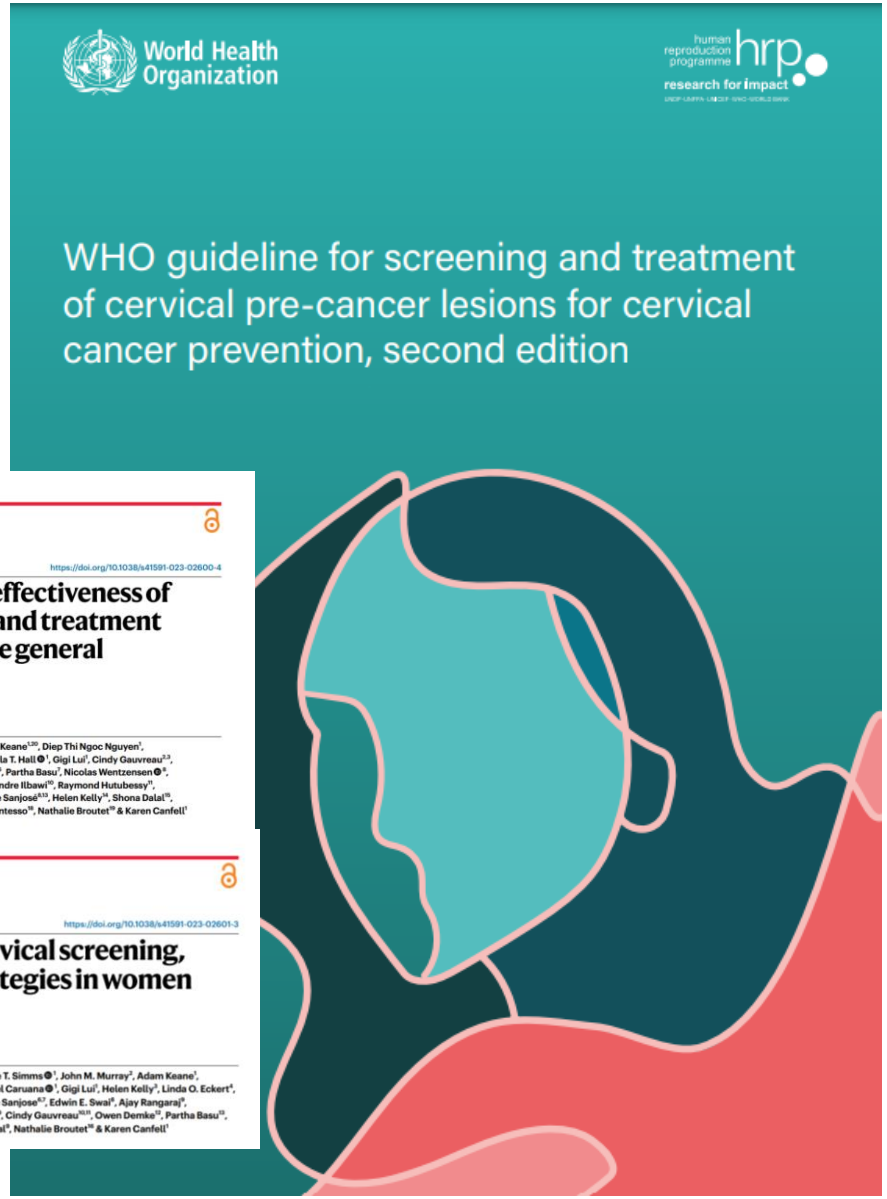


nature medicine

Article

https://doi.org/10.1038/s41591-023-02600-4

Benefits, harms and cost-effectiveness of cervical screening, triage and treatment strategies for women in the general population

Received: 19 December 2022
Accepted: 19 September 2023
Published online: 12 December 2023
Check for updates

Kate T. Simms, Adam Keane, Diep Thi Ngoc Nguyen, Michael Caruana, Michaela T. Hall, Gigi Lui, Cindy Gauvreau, Owen Demke, Marc Arbyn, Partha Basu, Nicolas Wentzensen, Beatrice Lauby-Secretan, Andre Ilbawi, Raymond Hutubessy, Maribel Almonte, Silvia De Sanjose, Helen Kelly, Shona Dalal, Linda O. Eckert, Nancy Santesso, Nathalie Broutet & Karen Canfell

nature medicine

Article

https://doi.org/10.1038/s41591-023-02601-3

Benefits and harms of cervical screening, triage and treatment strategies in women living with HIV

Received: 22 December 2022
Accepted: 20 September 2023
Published online: 12 December 2023
Check for updates

Michaela T. Hall, Kate T. Simms, John M. Murray, Adam Keane, Diep T. N. Nguyen, Michael Caruana, Gigi Lui, Helen Kelly, Linda O. Eckert, Nancy Santesso, Silvia de Sanjose, Edwin E. Swai, Ajay Rangaraj, Morkor Newman Owiredu, Cindy Gauvreau, Owen Demke, Partha Basu, Marc Arbyn, Shona Dalal, Nathalie Broutet & Karen Canfell

A critical enabler: new screening guidelines from WHO

*"WHO recommends using **HPV detection as the primary screening test** rather than VIA or cytology in screening and treatment approaches among **both the general population of women and women living with HIV**"*

WHO guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention, 2nd edition: https://www.who.int/publications/i/item/9789240030824

EPICC:
Elimination Partnership for Cervical Cancer in the Indo-Pacific

EPICC
ELIMINATION PARTNERSHIP IN THE INDO-PACIFIC FOR CERVICAL CANCER

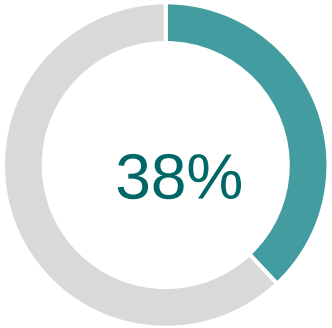
A partnership between

The Daffodil Centre
Cancer Council
THE UNIVERSITY OF SYDNEY
Kirby Institute
Australian Centre for the Prevention of Cervical Cancer
Unitaid
NCIRS
family planning australia

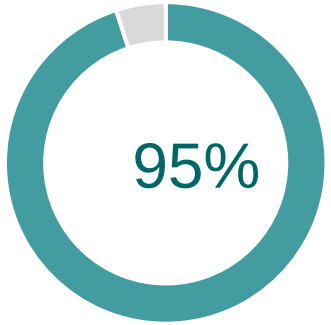
EPICC in Vanuatu

20,000 age-eligible girls for HPV vaccination and 34,000 age-eligible women for HPV screening

HPV vaccination



HPV-based cervical screening



Treatment of cancer and precancer

EPICC

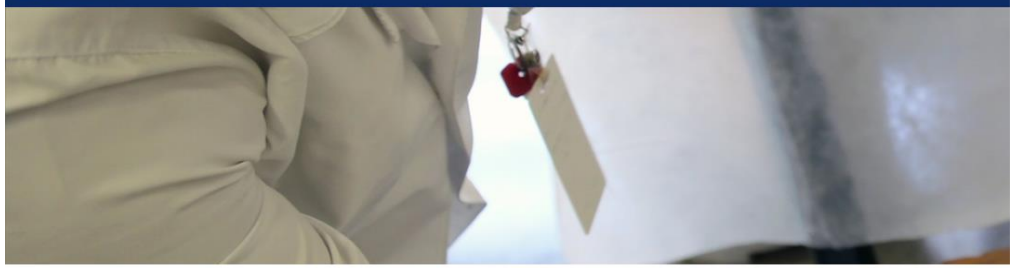
MINISTRY OF HEALTH
GOVERNMENT OF VANUATU

MINDEROO FOUNDATION

ELIMINATION PARTNERSHIP IN THE INDO-PACIFIC FOR CERVICAL CANCER

March 5th, 2024

World Health Organization | Health Topics | Countries | Newsroom | Emergencies



Wave of new commitments marks historic step towards the elimination of cervical cancer

New country, policy and program commitments, plus nearly US$ 600 million in new funding, at first-ever global forum offer a chance to save hundreds of thousands of lives by 2030.

5 March 2024 | News release | Cartagena de Indias, Colombia |Reading time: 7 min (1828 words)

Governments, donors, multilateral institutions, and partners today announced major new policy, programmatic and financial commitments, including nearly US$ 600 million in new funding, to eliminate cervical cancer. If these ambitions to expand vaccine coverage and strengthen screening and treatment programs are fully realized, the world could eliminate a cancer for the first time.

September 21st, 2024

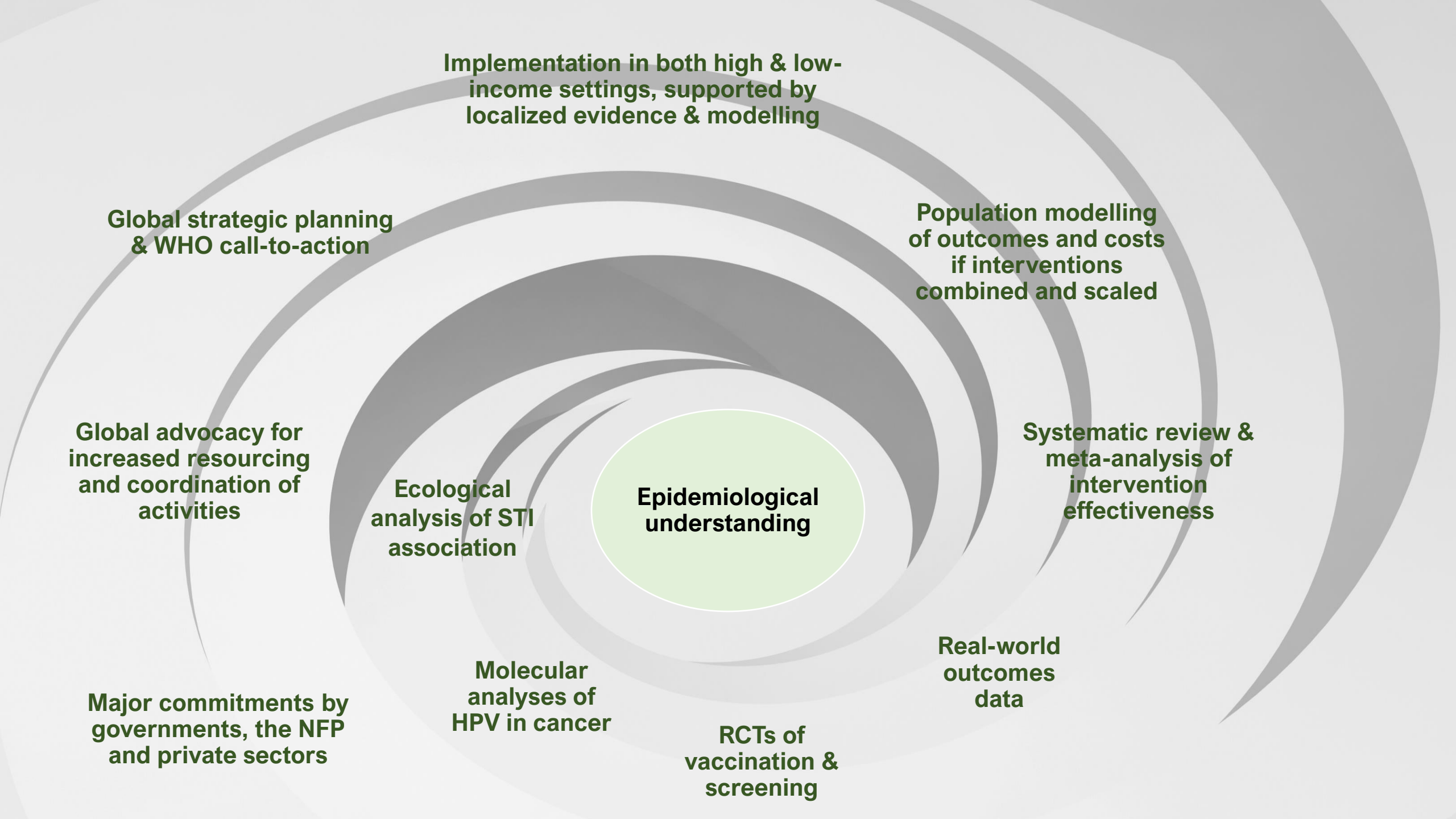
Administration

SEPTEMBER 21, 2024

Fact Sheet: Quad Countries Launch Cancer Moonshot Initiative to Reduce the Burden of Cancer in the Indo-Pacific

BRIEFING ROOM › STATEMENTS AND RELEASES

Today, the United States, Australia, India, and Japan are launching a groundbreaking effort to help end cancer as we know it in the Indo-Pacific, starting with cervical cancer, a largely preventable disease that continues to be a major health crisis in the region, and laying the groundwork to address other forms of cancer as well. This initiative is part of a broader set of announcements made at the Quad Leaders Summit. ↗


Implementation in both high & low-income settings, supported by localized evidence & modelling
Global strategic planning & WHO call-to-action
Population modelling of outcomes and costs if interventions combined and scaled
Global advocacy for increased resourcing and coordination of activities
Ecological analysis of STI association
Epidemiological understanding
Systematic review & meta-analysis of intervention effectiveness
Real-world outcomes data
Molecular analyses of HPV in cancer
Major commitments by governments, the NFP and private sectors
RCTs of vaccination & screening

EVERYONE IS INVITED TO JOIN THE LAUNCH

Since Dr. Tedros' Call to Action in May 2018, the world has responded: in August 2020, the World Health Assembly passed a resolution calling for elimination of cervical cancer and adopting a strategy to make it happen.

On November 17, following the close of the 73rd World Health Assembly, WHO will mark this historic announcement and officially launch the elimination strategy.

Women who have survived cervical cancer from all regions of the world - women who have fought the disease - will open the event. All around the world, companion events and launch activities will mark a day of action.

The moment has arrived for an ambitious, concerted and inclusive strategy to accelerate eliminating cervical cancer as a public health problem.

17th November 2020
1430-1600 CET

EVERYONE IS INVITED TO JOIN THE LAUNCH

FIND OUT MORE

CERVICAL CANCER FREE FUTURE

World Health Organization

With grateful acknowledgement to:

The Cervical and HPV Stream at The Daffodil Centre: Dr Kate Simms, A/Prof Megan Smith, Prof Deborah Bateson, Ms. Chloe Jennet, Ms. Caitlin McLachlan, Mr. Timothy Balshaw, Ms. Laura Sergeant, Dr Adam Keane, Dr James Killen, Dr Diep Nyugen, Dr Michaela Hall, Dr Xin An, Ms. Susan Yuill, Ms. Dominique Louw, Dr Daniela Rivas, Dr, Louiza Velentzis, Dr, Michael Caruana, Dr Telma Costa, Dr, Matthew Palmer, Dr Monjura Nisha, Dr Rubana Islam, Dr Elizabeth Kennedy, Dr Lauren Winkler, Ms. Kay Rimalos, Ms. Helen Liang, Ms. Gigi Lui, and special thanks to Anna Kelly.

Members of the NHMRC Centre for Research Excellence in Cervical Cancer Control (C4)

Other leads for the WHO Global Cervical Cancer Elimination Modelling Consortium (CCEMC): Dr. Jane Kim, Dr. Marc Brisson and Dr. Raymond Hutubessy & their teams

The I-PaRCS consortium members and Steering Group: Dr Isabelle Soerjomataram, Dr Freddie Bray, Mr Rami Rahal, Dr Julie Torode, A/Prof Iris Lansdorp-Vogelaar, Dr. Ophira Ginsberg & Prof Richard Sullivan..

Mirabel Alimante, Nathalie Broutet, Linda Elkhart and the WHO Cervical Screening & Treatment Guidelines Working Group and Guidelines Development Group

The International Cancer Benchmarking Partnership; Cancer Research UK: Elle Pearson, Alexander Wright

Other CISNET-Cervical PIs and their teams: Jane Kim, Shalini Kulasingam, Inge de Kok & Ruanne Barnabas

Other EPICC Leads: Andrew Vallely, Deborah Bateson, Marion Saville, Kristine Macartney, Ted Trimble, Vanessa Price, Anne Stuart, Kirstie Graham, Sanchia Aranda

Other collaborators whose work I have highlighted here: Dr Florence Guida & Prof Valerie McCormack, Dr Hiroki Akaba, Dr. Emily Burger.

The women and people, families and communities impacted by cervical cancer