



A Global Strategy for
elimination of cervical cancer

Global Strategy for elimination of cervical cancer

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Adriana Velazquez Berumen, Medical devices and in vitro diagnostics.

Global strategy to accelerate the elimination of cervical cancer as a public health problem



**End Poverty
in All its
Forms
Everywhere**



**Ensure healthy
lives and promote
well-being for
all at all ages**



**Achieve gender
equality and
empower all
women and girls**



**Reduce
inequality
within and
among countries**



ASR Mortality cervical cancer- 2018

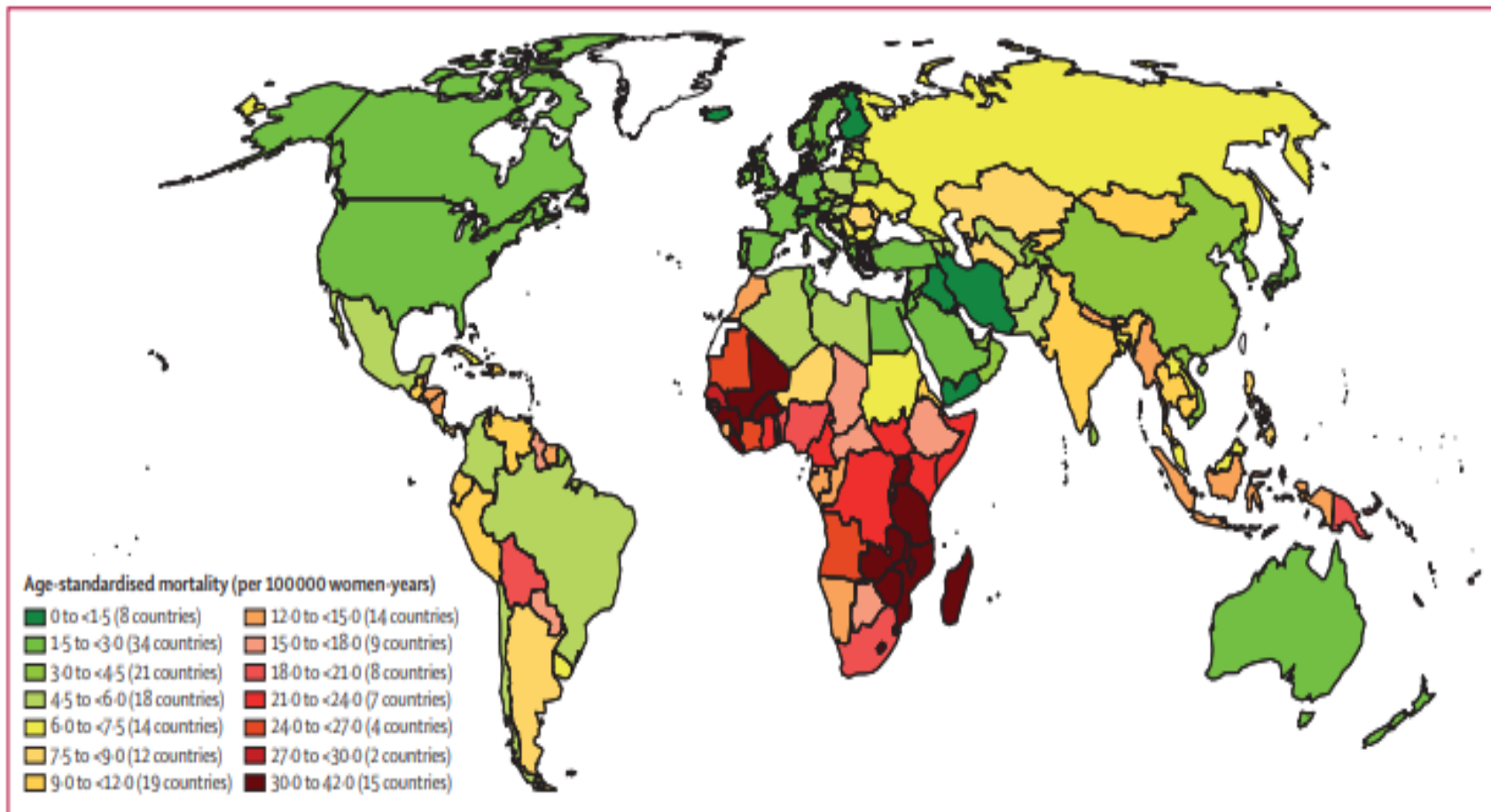
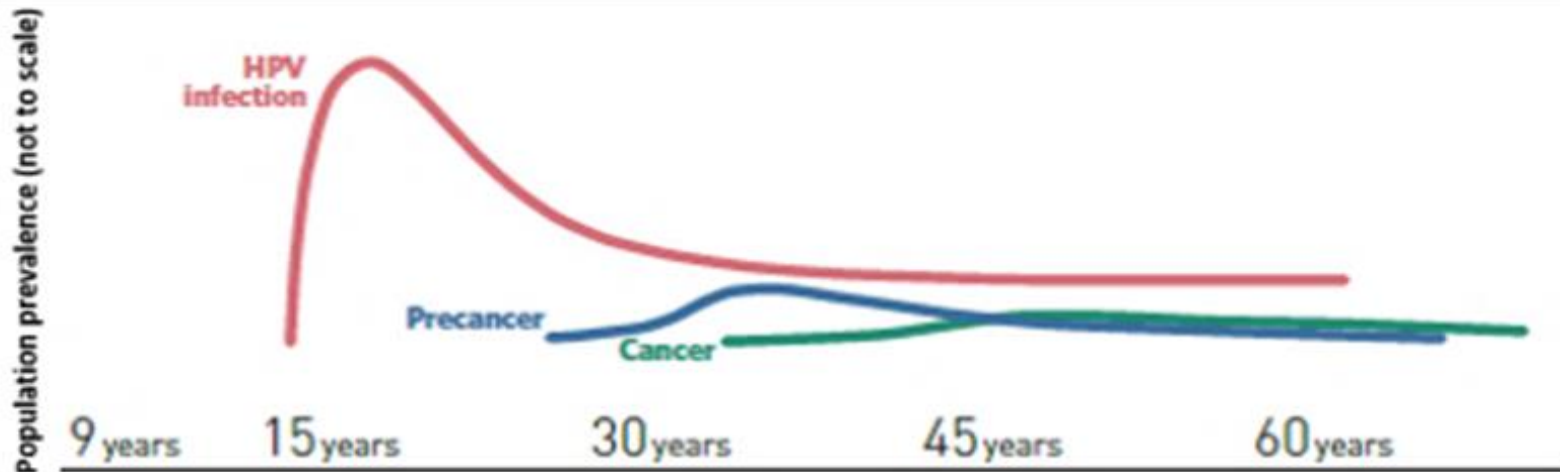


Figure 2: Geographical distribution of world age-standardised mortality rate of cervical cancer by country, estimated for 2018

Life-Course Approach to Cervical Cancer Control



PRIMARY PREVENTION

Girls 9-14 years

- HPV vaccination

Girls and boys, as appropriate

- Health information and warnings about tobacco use
- Sexuality education tailored to age & culture
- Condom promotion/ provision for those engaged in sexual activity
- Male circumcision

SECONDARY PREVENTION

Women >30 years of age

- Screening with a high-performance test equivalent or better than HPV test
- Followed by immediate treatment or as quickly as possible, of pre-cancer lesions

TERTIARY PREVENTION

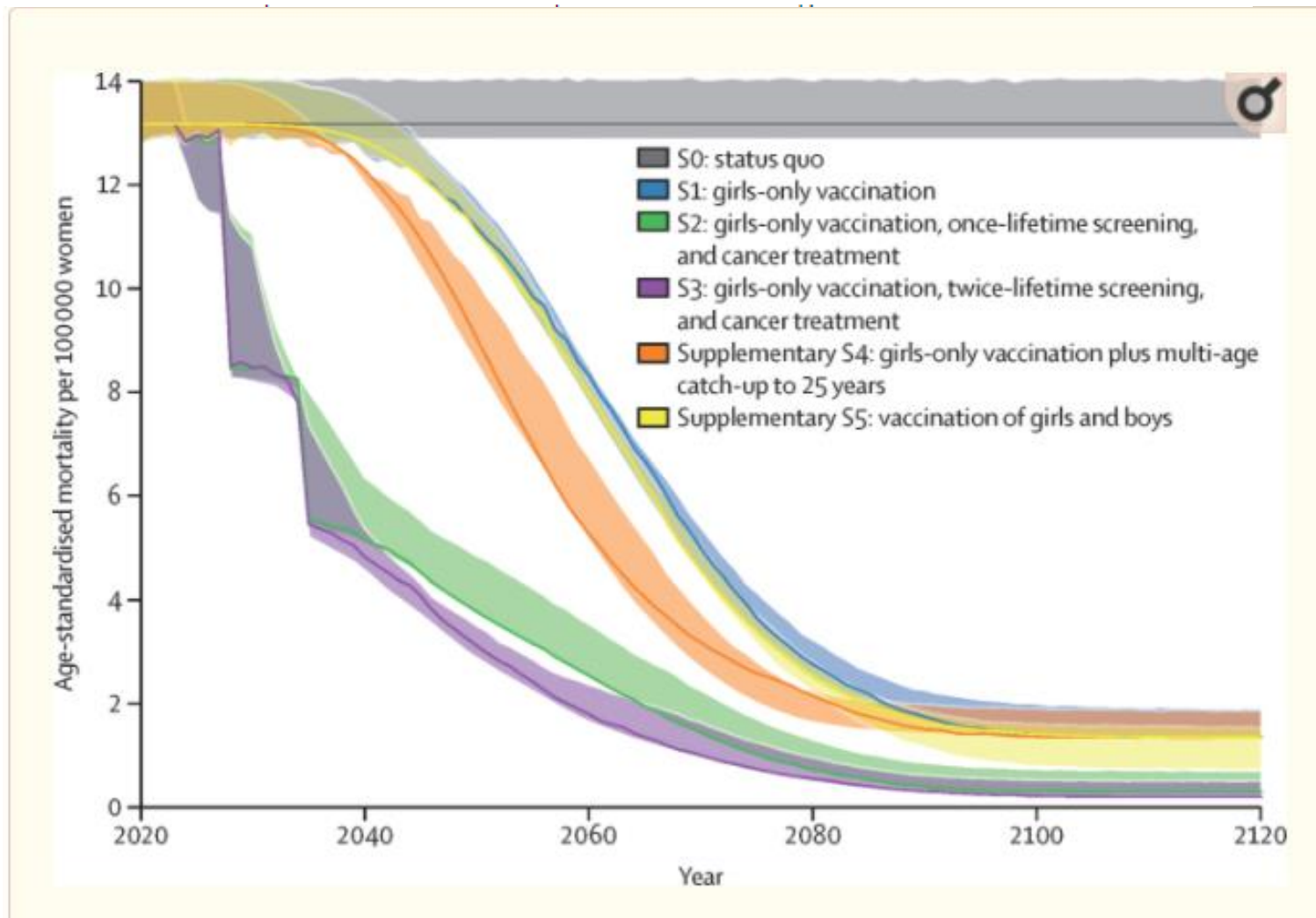
All women as needed

Treatment of invasive cancer at any age

- Surgery
- Radiotherapy
- Chemotherapy
- Palliative care

Mortality impact of achieving WHO cervical cancer elimination targets: a comparative modelling analysis in 78 low-income and lower-middle-income countries

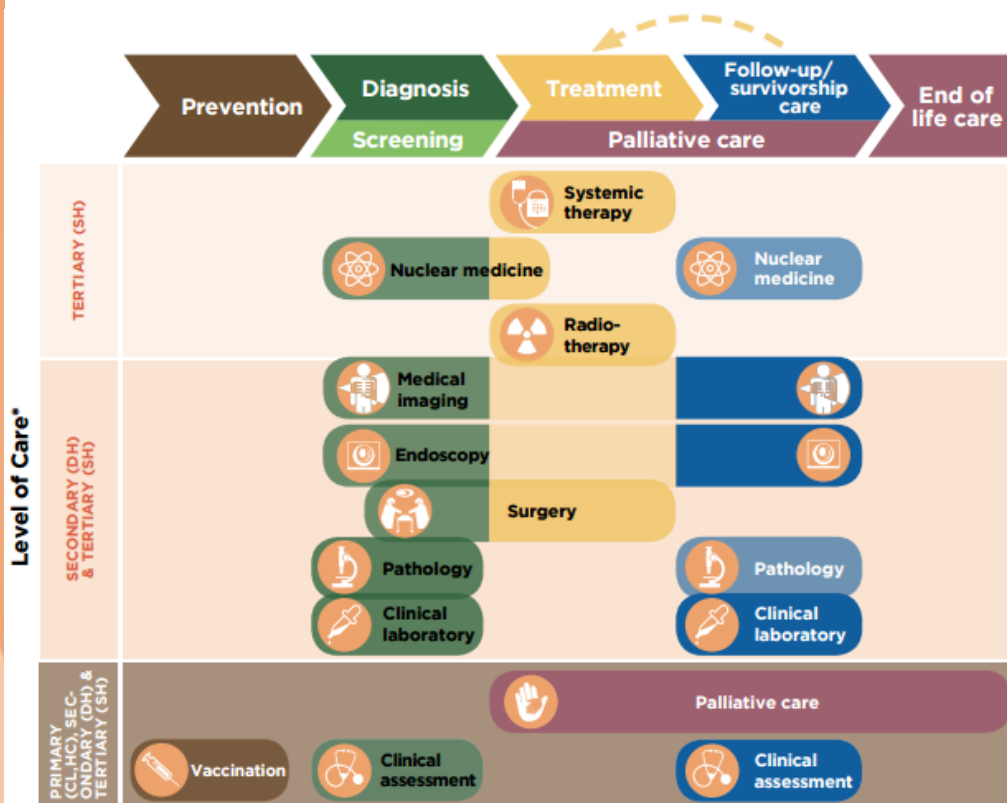
[Karen Canfell](#), DPhil,^{a,b,c,†} [Jane J Kim](#), Prof, PhD,^{d,†} [Marc Brisson](#), Prof, PhD,^{e,f,g,†} [Adam Keane](#), PhD,^{a,b}



WHO selection of priority medical devices for cancer management. (2017)

WHO list of priority medical devices for cancer management

WHO Medical device technical series



* Appropriate level of care will depend on the particular intervention, setting, and available infrastructure and human resources.
 CL Community Level health post DH District Hospital HC Health Centre SH Specialized Hospital

The Architecture to Eliminate Cervical Cancer

THRESHOLD: All countries to reach < 4 cases 100,000 women

2030 CONTROL TARGETS

90%

of girls fully vaccinated with HPV vaccine by 15 years of age

70%

of women screened with a high precision test by 35 and 45 years of age

90%

of women identified with cervical disease receive treatment and care

SDG 2030: Target 3.4 – 30% reduction in mortality from NCDs

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To Increase Access to S&T We Need to Move Toward High Performance Test

Complex or Low-Sensitivity

Cytology:

Successful in high-resource countries, but implementing quality cytology screening is challenging in middle and low resource countries

VIA:

Naked eye visual inspection with 3-5% acetic acid



High Performance Alternatives

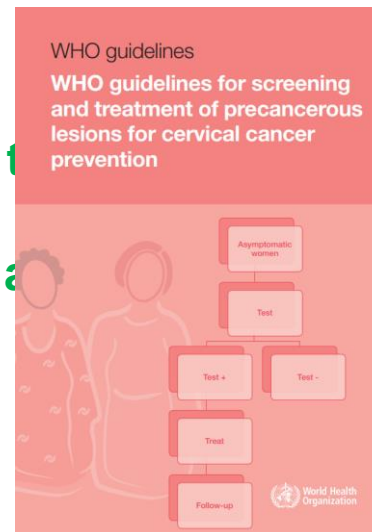
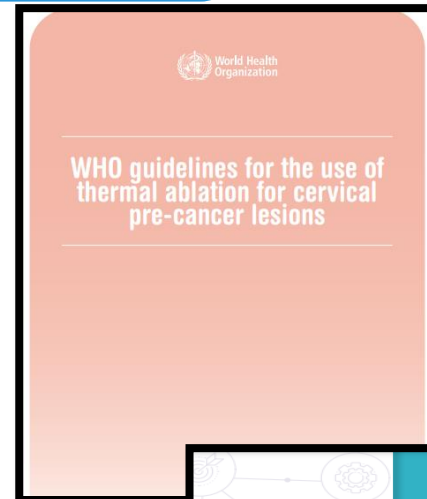
- **HPV Testing**
 - **No triage**
 - Followed by treatment with cryotherapy or thermal ablation
- **HPV Testing**
 - **Plus triage with HPV 16/18, VIA or other tests**
 - Followed by treatment with cryotherapy or thermal ablation

Strategic actions to achieve 70% coverage for screening and 90% treatment of precancerous lesions

- **The population of women aged 35-45 years is 101.2 million**
 - Understand barriers to accessing services and create an enabling environment
- It is the screening programme that makes the difference and not the screening test
- **COVERAGE, QUALITY and OUTCOMES**
- **Phased implementation**
- **Learning by doing**
- **Use the opportunity of screening for other cancers and conditions such as hypertension and diabetes.**

70%

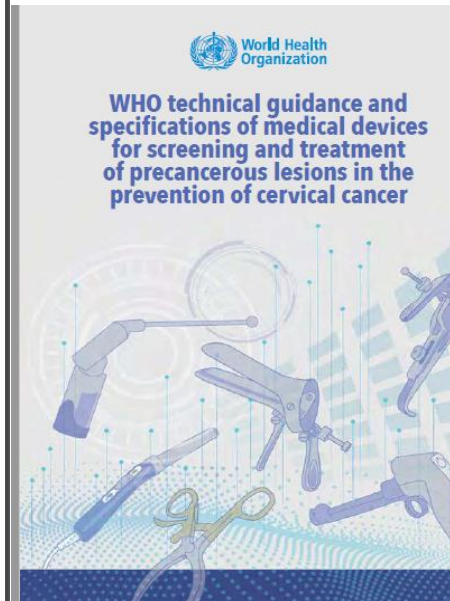
of women screened with a high precision test by 35 and 45 years of age



Technical guidance and specifications of medical devices for screening and treatment of precancerous lesions in the prevention of cervical cancer (2020)



Testing Method	Manual	Automated	Point of Care or near patient testing
Manual steps	Maximum	Limited	Limited
Operator Qualifications	Experienced in laboratory procedures	Trained for specific automation	No laboratory experience needed; focused device training
Throughput	Small to moderate batch testing	High volume batch testing, but random access available	Single specimen, but can combine multiple modules to increase volume
Infrastructure Requirements	Vast majority of methods require reagent-grade water, continuous, reliable power supply. Requires appropriate chemical and biohazard waste management	Reagent-grade water, continuous, reliable power supply, significant laboratory footprint. Requires appropriate chemical and biohazard waste management	Continuous, reliable power supply. Requires appropriate chemical and biohazard waste management
Advantages	Lower initial investment	High throughput, limited operator involvement	Facilitates "screen and treat" programmes, no laboratory experience needed to operate



6.3. Types of cryotherapy units

6.3.1 Different types of cryosurgical units

Table 9: Comparison between gas and electrically cooled cryotherapy units

Type	Gas cooled	Electrically cooled
Image		

Table 6: Comparison table of types of colposcopes

Type	Binocular mounted colposcope	Digital or video mounted colposcopes
Image		

<https://www.who.int/publications/i/item/9789240002630>

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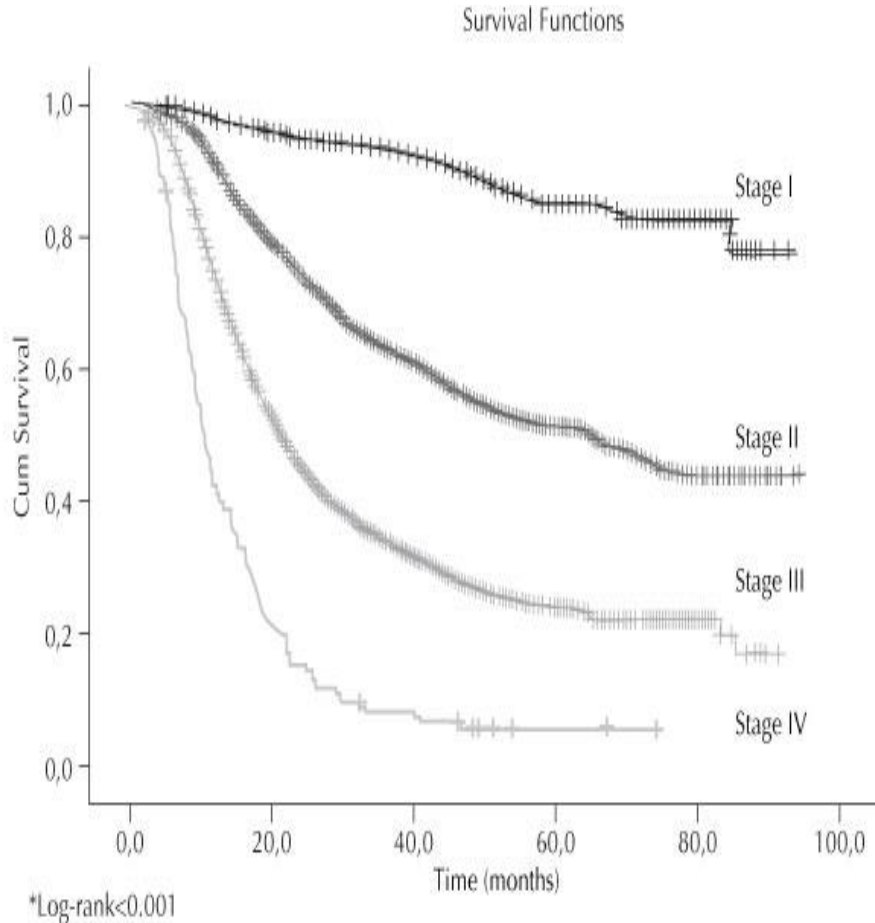
of women screened with a high precision test by 35 and 45 years of age

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SDG 2030: Target 3.4 – 30% reduction in mortality from NCDs

90% 5 year survival rate in Stage 1 compared to less than 10% in Stage 4. Early diagnosis is critical.

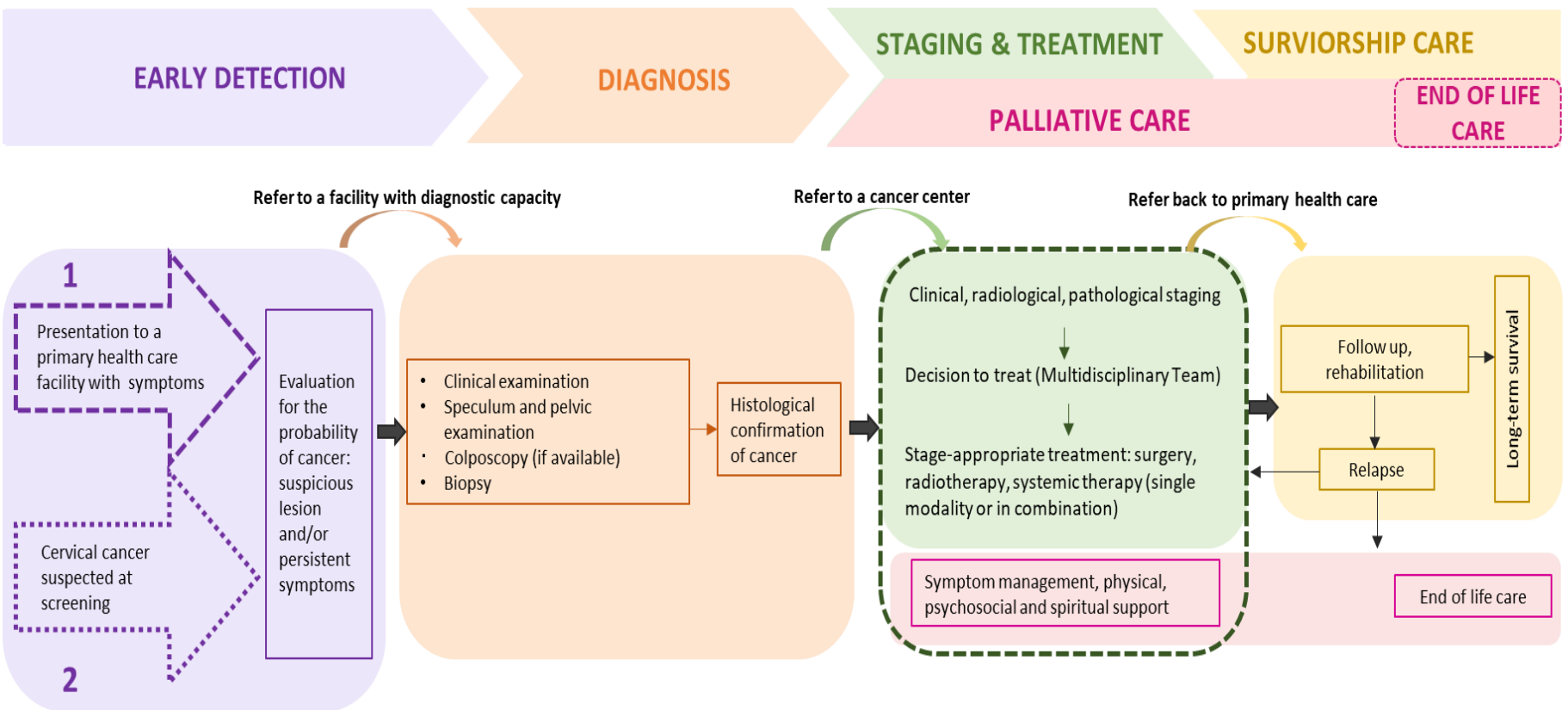


*Log-rank estimated by the Mantel-Cox test.

Figure 2. Kaplan-Meier survival curves for women with invasive cervical cancer according to tumor : Southeastern Brazil, 1999–2004.

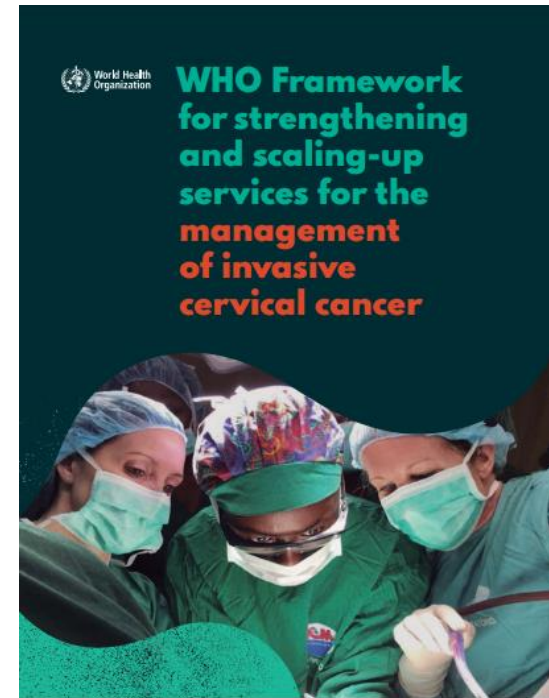


Timely treatment saves lives-avoid delay!



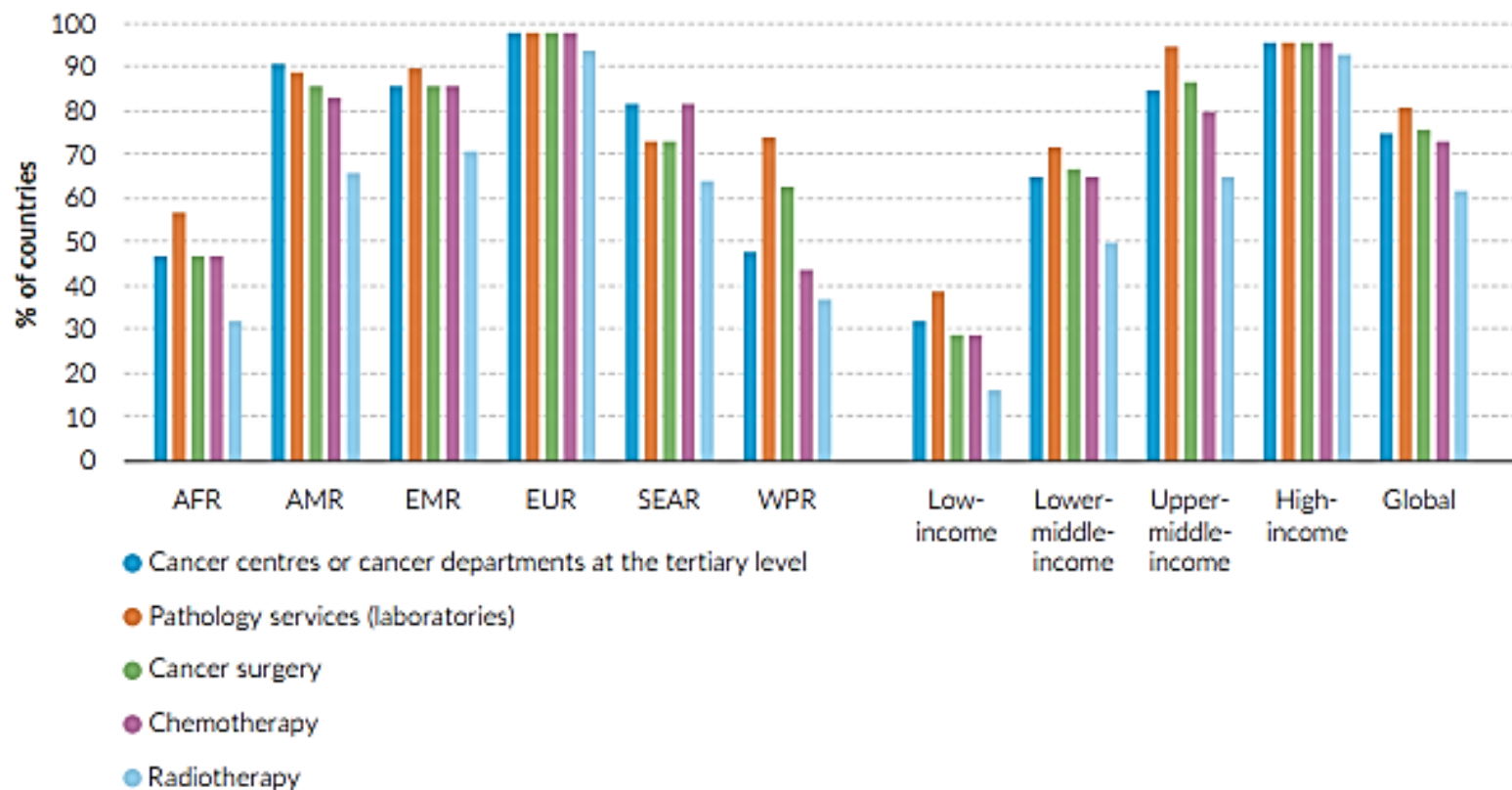
Strategic actions to achieve 90% treatment and care for cervical cancer cases (2020)

- Implement cervical cancer management guidelines
- Establish referral pathways and people centred linkages throughout the continuum of care
- Strengthen pathology services
- Expand surgical capacity
- Improve access to radiotherapy and chemotherapy
- Strengthen and integrate palliative care services
- Optimize health workforce competencies
- Reduce cancer stigmatization
- Comprehensive care for survivors



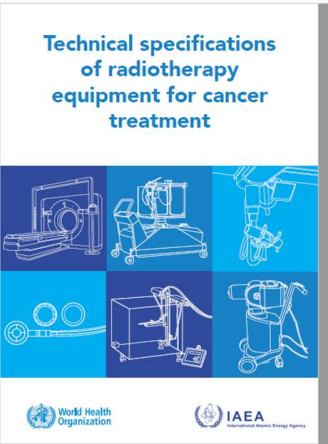
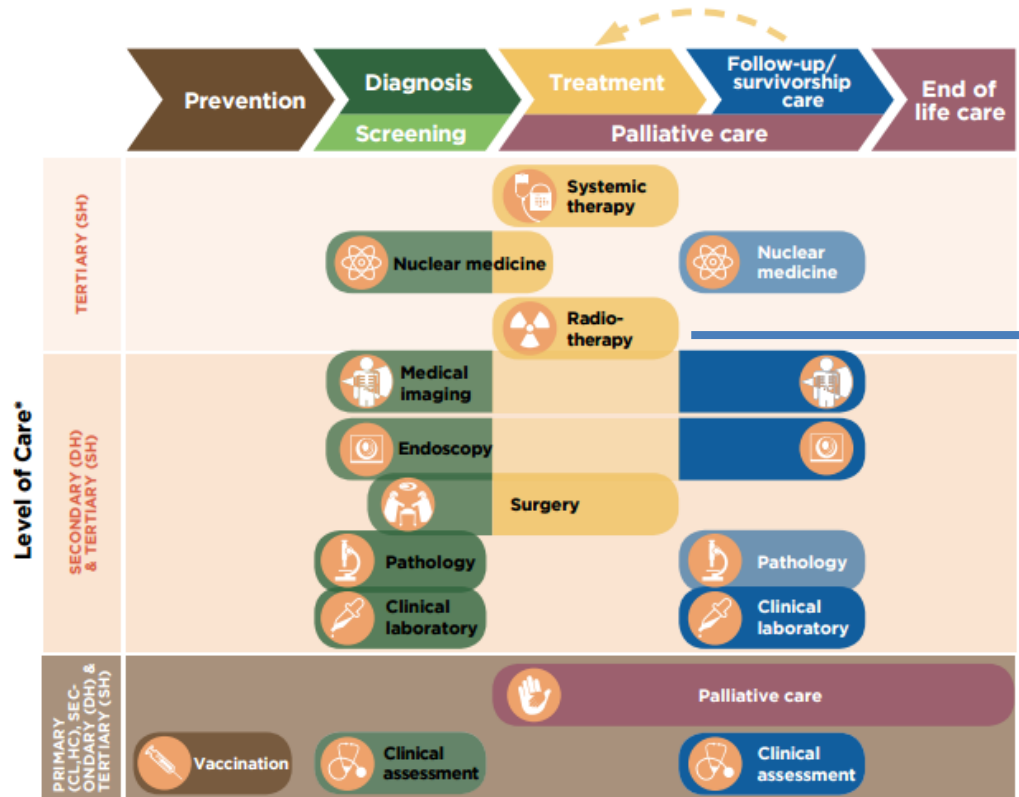
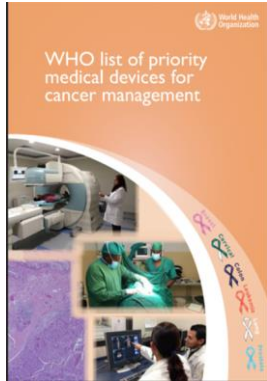
In the low-income group cancer diagnosis and treatment services were markedly less available, with **16% of countries reporting radiotherapy services as being generally available**, and 39% pathology services.

Percentage of countries with cancer diagnosis and treatment services reported as being "generally available" in the public sector, by WHO region and World Bank income group



AFR: WHO African Region; AMR: WHO Region of the Americas; EMR: WHO Eastern Mediterranean Region; EUR: WHO European Region; SEAR: WHO South-East Asia Region; WPR: WHO Western Pacific Region.

Radiotherapy is part of the cancer care pathway



* Appropriate level of care will depend on the particular intervention, setting, and available infrastructure and human resources.
 CL Community Level health post DH District Hospital HC Health Centre SH Specialized Hospital

WHO IAEA Radiotherapy Technical Specifications (2021)

Chapter 1. Introduction

Chapter 2. Overview of radiotherapy equipment

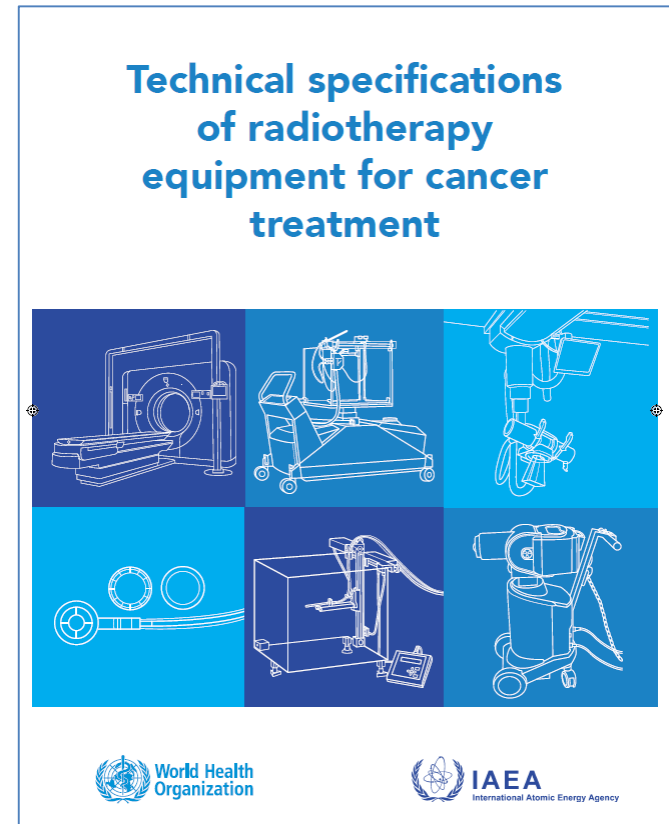
Chapter 3. Technical specifications for **external beam radiotherapy** equipment

Chapter 4. Technical specifications for **brachytherapy** equipment

Chapter 5. Introduction to establishing radiotherapy services

Chapter 6. Emerging technology and techniques

Annexes 1 to 11. WHO templates for technical specifications



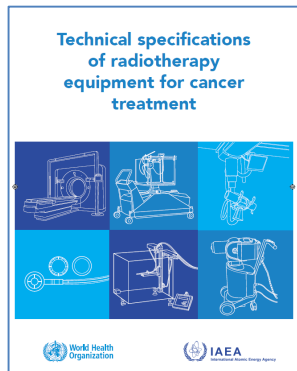
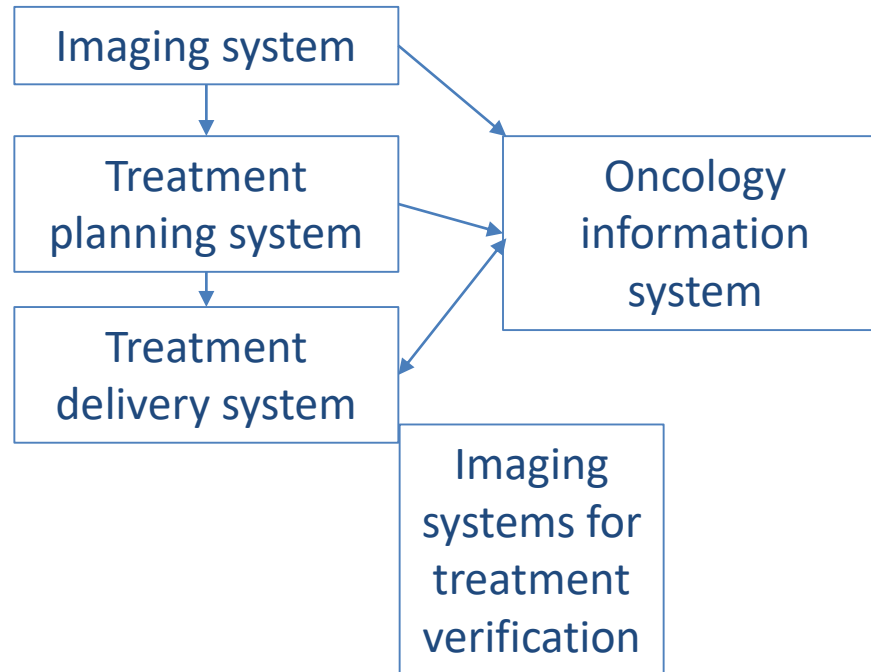
Chapter 1. Introduction

Patient immobilization equipment

Patient treatment accessories

Dosimetry and QC equipment

Radiation safety equipment



Chapter 2. Overview of equipment

Definition of packages of radiotherapy equipment based on health system capacity

	Package 1	Package 2	Package 3
Component	Brachytherapy		
Treatment unit	HDR remote afterloading unit	HDR remote afterloading unit	HDR remote afterloading unit
Source	Cobalt-60	Cobalt-60 or iridium-192	Cobalt-60 or iridium-192
Applicators	Cervical (ring applicator set; ovoid applicator set; vaginal cylinders set); endometrial applicator set; transfer tubes	Cervical (ring applicator set including interstitial needles; ovoid applicator set; vaginal cylinders set)*; endometrial applicator set; transfer tubes	Additional CT-MR- compatible cervical intracavitary (ring applicator set; ovoid applicator set; vaginal cylinder set); intracavitary-interstitial (Vienna, Utrecht type); endometrial applicator set; prostate (reusable needles set); transfer tubes
Treatment planning	2D TPS	2D or 3D TPS	3D TPS
Imaging	Conventional simulator or C-arm fluoroscopic X-ray unit; ultrasound with convex probe	Conventional simulator or C-arm fluoroscopic X-ray unit or CT simulator; ultrasound with convex probe and endorectal probe	CT simulator; access to MRI; ultrasound with convex probe and endorectal probe

Annexes – WHO templates

Annexes provide the technical specifications in the format of the WHO standard template for medical device specification

Annex 2.
WHO template for cobalt-60 teletherapy unit technical specifications

Medical device specifications		
37	Training of user/s (if relevant)	Applications training in configuration, clinical operation, safety features and service mode.
38	User care (if relevant)	The equipment shall only be used in accordance with departmental policies, procedures and work instructions, and consistent with manufacturer's use instructions, to ensure safety and protection.
Warranty and maintenance		
39	Warranty	At least 12 months
40	Maintenance tasks	Approximately 4 service days per year. Tasks as per manufacturer's preventative maintenance schedule.
41	Type of service contract	Full-service contract, including parts, service and repair or in-house maintenance engineering service.
42	Spare parts availability post-warranty	10 years minimum
43	Software/hardware upgrade availability	To be specified by manufacturer.
Documentation		
44	Documentation requirements	Comprehensive user manual, including emergency procedures.
Decommissioning		
45	Estimated lifespan	10–15 years with cobalt-60 source exchange every 5 years.
Safety and standards		
46	Risk classification	US FDA: Device Class 2
47	Regulatory approval/certification	Radiation regulatory approval for equipment possession, use and premises.
48	International standards	IEC, Medical Electrical Equipment, Part 1: General Requirements for Safety, Rep. IEC 60601-1:2005+AMD1:2012. Radiation Protection and Safety of Radiation Sources, International Basic Safety Standards, No. GSR Part 3, IAEA, Vienna, 2014 (23). IEC, Medical electrical equipment – Part 2-11: Particular requirements for the basic safety and essential performance of gamma beam therapy equipment, IEC 60601-2-11:2013. IEC, Radiotherapy equipment – Coordinates, movements and scales, IEC 61217, 2011. ISO, Radiological protection – Sealed radioactive sources – General requirements and classification, ISO-2919:2012. IEC, Guidance on error and warning messages for software used in radiotherapy, IEC TR 63183:2019.
49	Regional/local standards	Country-specific and regional standards may apply.
50	Regulations	USA: 21CFR892.5750 Radionuclide radiation therapy system Local radiation safety regulations may apply.

Services to be provided at different health care delivery levels, Kerala, India. (following the priority medical devices model)

	Level of health care	Prevention	Diagnosis Screening	Treatment Palliative care	Follow-up/ survivorship care	End of life care
4	Comprehensive Cancer Care Centres	Guidance, Capacity building, Research, Training Courses (Super-specialty, Nurses & Other health care providers)	Guidance, Capacity building, Research, Cancer Registry Advanced Diagnostic Facilities (Radio Diagn & Nuclear med)	Referral care Multidisciplinary care Specialized services Rare cancers Management Capacity building, Research, Cancer notification		Guidance, Skill building, Research, Palliative Care
3	Oncology unit in Medical College	Capacity Building Vaccination (HBV, HPV)	Diagnosis of Common Cancers Cyto-pathology & Histopathology Radio-diagnosis (CT/ MRI) Endoscopy & Colonoscopy	Referral care Radiotherapy Chemotherapy Onco-Surgery Palliative care Clinic Cancer Notification		Skill building Palliative care Clinic
2	District hospitals (Cancer Treatment & Care Centre)	Training of Health Care providers Coordination & Implementation of Media Plan Vaccination (HBV, HPV)	Early diagnosis for common cancers Referral for diagnosis to near by Medical Colleges/ Comprehensive Cancer Care Centres	Continued & Palliative Chemotherapy Directory of all cancer patients (Sites, Stages, Mode of treatment, Survival) Palliative care Clinic Cancer Notification		Palliative care Clinic
1	THQ, CHC and PHC (Basic CPU)	Health Promotion Vaccination (HBV, HPV)	Early Diagnosis for common Cancers Clinical assessment & Referral to higher centres	Early Referral Palliative care Clinic Cancer Notification		Home Based Care & Pain relief



1958

“Equitable access to all priority health technologies is predicated on quality, safety, affordability and equity,”

“This is important across the spectrum - from simple devices to these complex radiotherapy systems.”



2021

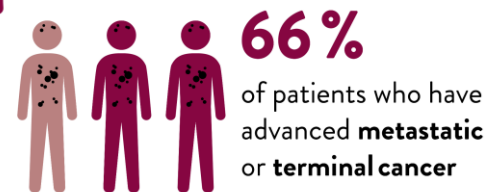
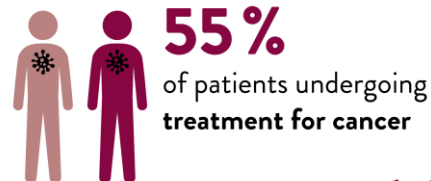


Pain and symptom relief are human rights-



Pain is an unpleasant sensory and emotional experience.

CANCER PAIN IS EXPERIENCED BY



Pain relief improves the quality of life of patients with cancer

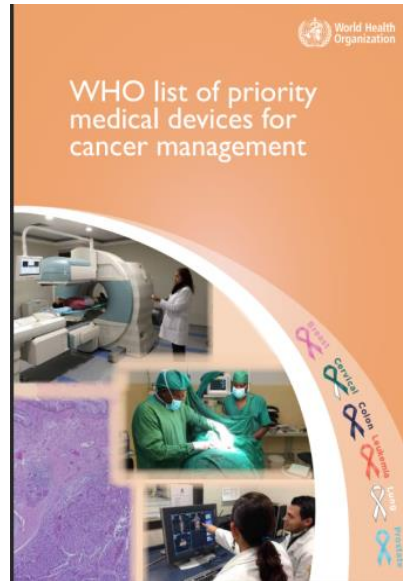


World Health
Organization

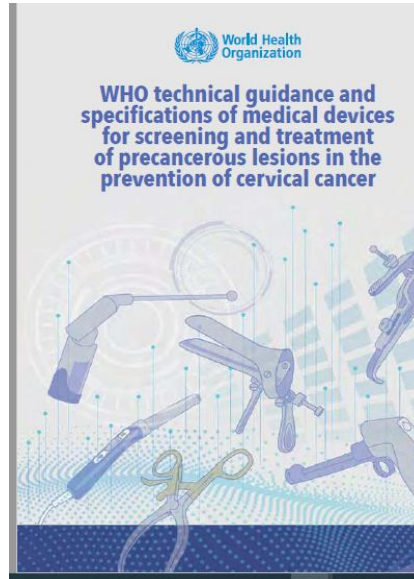
#Cancer #PalliativeCare

WHO guidance on medical devices for cancer prevention, diagnostics and treatment

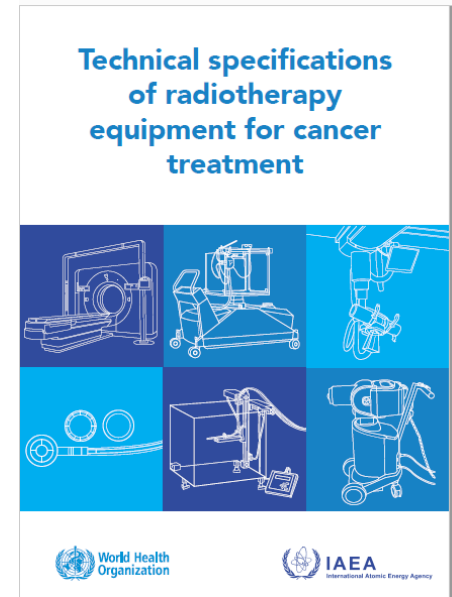
2017



2020



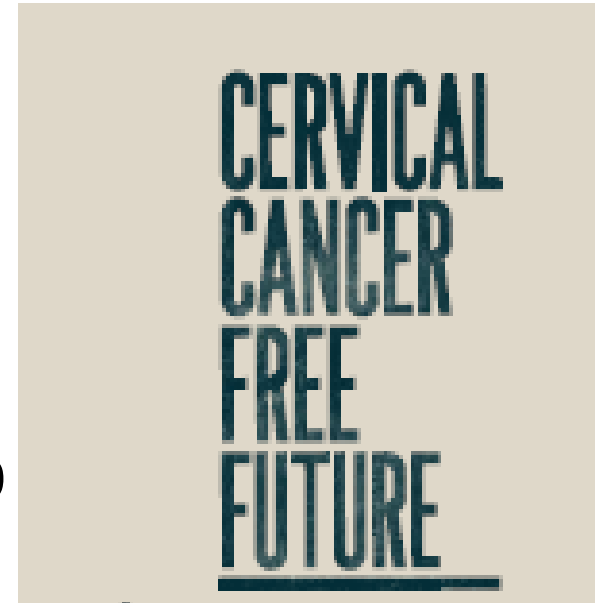
2021



It is possible..

It is not about technologies, it is about lives!

- **Elimination is feasible** in most LMICs before 2100
- **Status quo is not an option** – number of cases will increase dramatically due to population growth, demographic changes and changes in behavior
- **Near Term Benefits**
 - **100,000** cervical cancer cases averted **by 2030**
 - **250,000** cervical cancer deaths prevented **by 2030**
- **Now is the time to act.** With knowledge and innovative solutions, we **can** eliminate cervical cancer.



**It is possible... let's work together...
Behind every technology there is a life to save!**

**Global strategy to accelerate the
elimination of cervical cancer as
a public health problem**



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