

The Cuban Comprehensive Cancer Control Program

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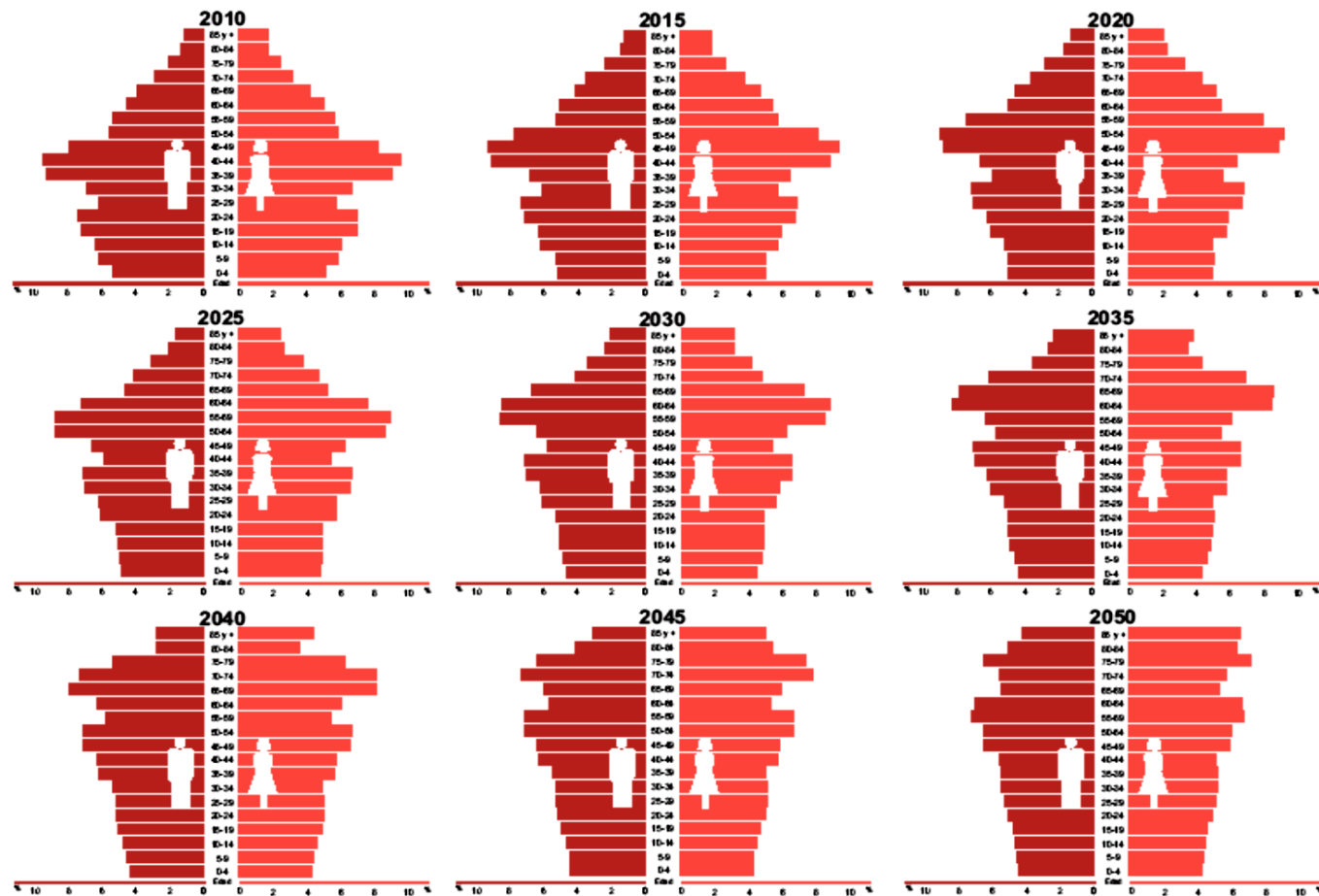
Head of Medical Oncology Department

Institute of Oncology And Radiobiology

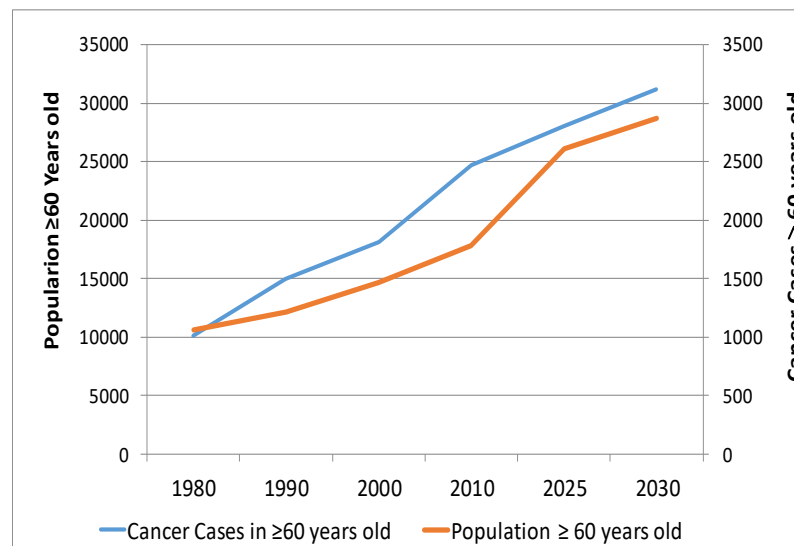
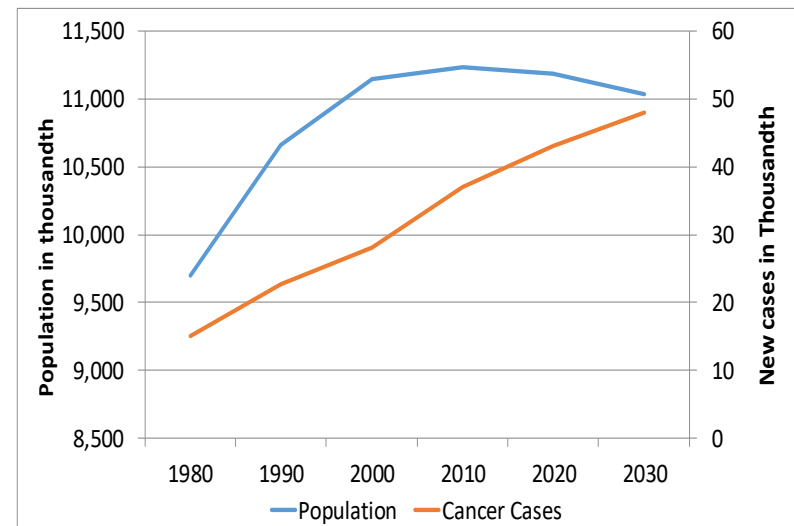
Cancer burden in Cuba

Population aging and cancer

Cuba Population 2010-2050



25,7% \geq 60 years



National Cancer Registry of Cuba: 1964-2024

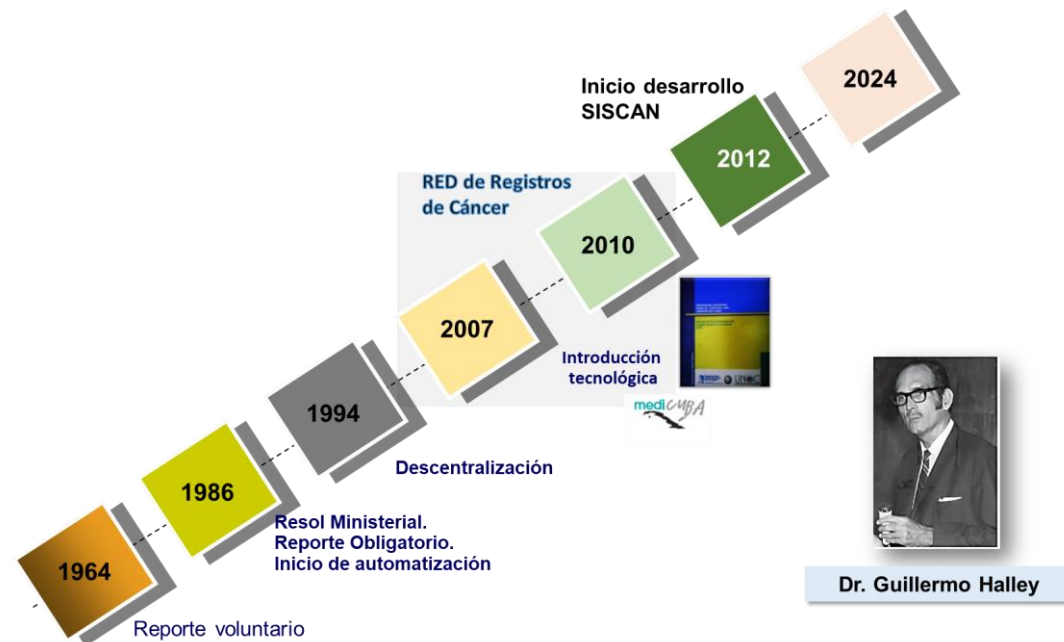
60 years providing information to cancer surveillance



<https://temas.sld.cu/estadisticassalud/>
<http://www.rnc.sld.cu/>

Among the **three oldest** population-based cancer registries in Latin America and the Caribbean and **one of the four national registries**.

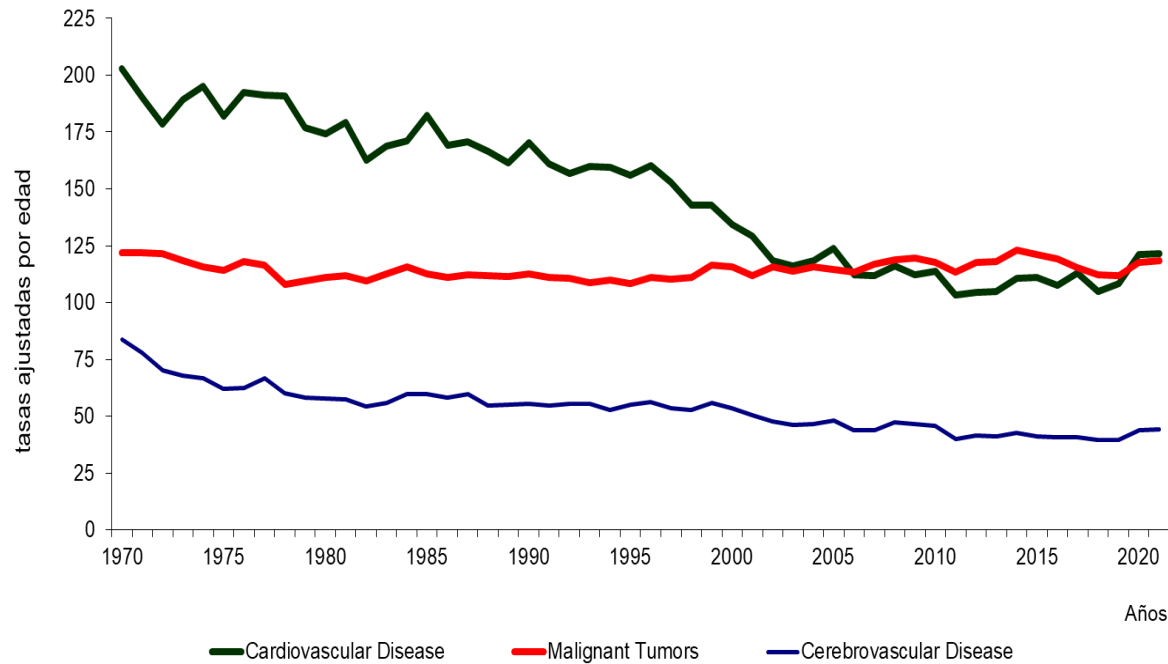
At present, it is the cancer registry with the **greatest population coverage** in the Latin American and Caribbean region.



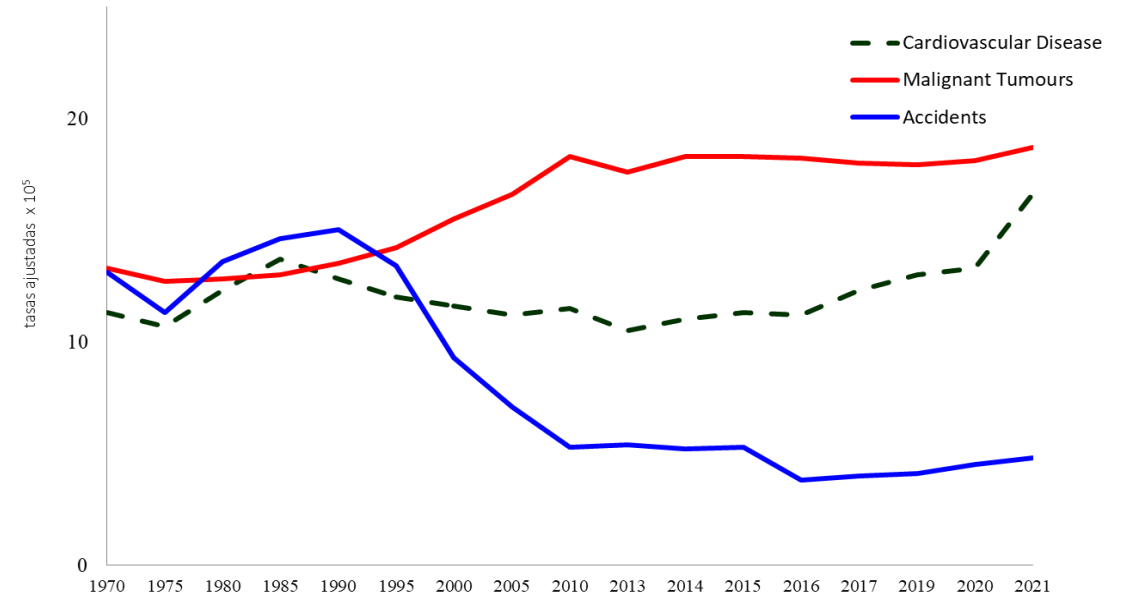
Data in international publications.
Cancer in V Continents, Childhood Cancer, CONCORD study

Cancer burden in Cuba

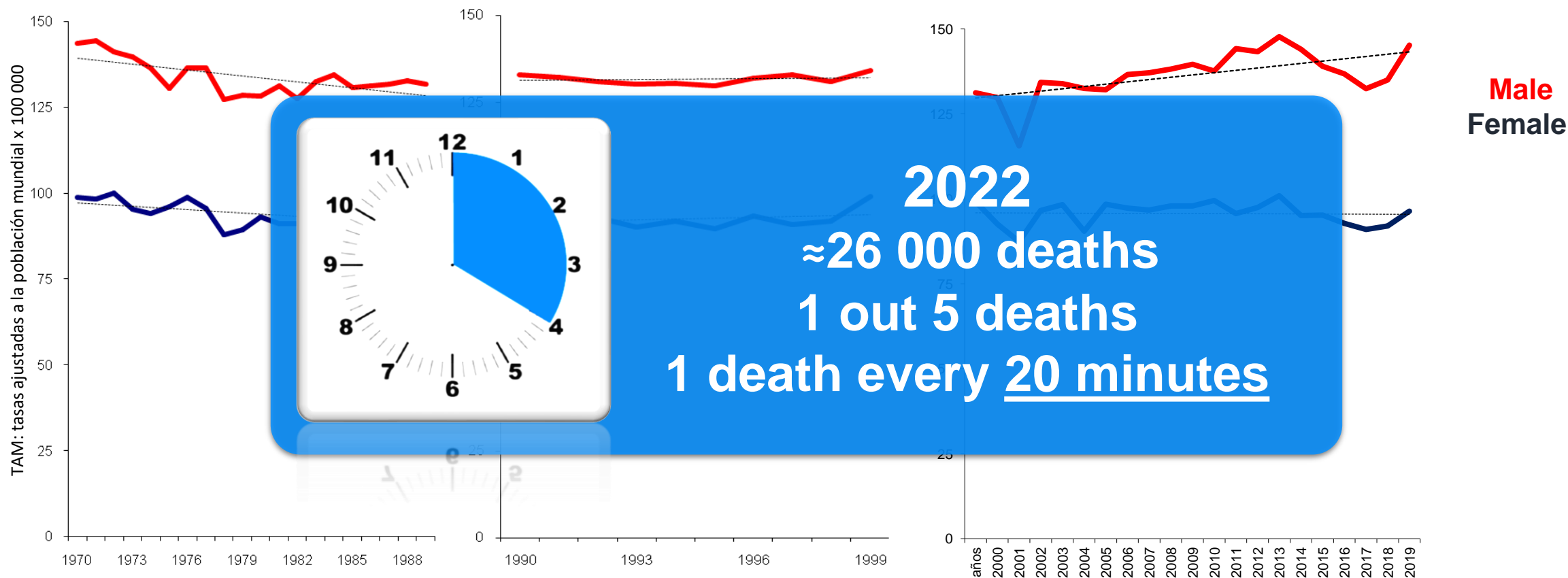
Main causes of death. Cuba 1970-2022



Years of potential life lost x 10 000 habitants from 1 to 74 years old. Cuba 1970-2022



Cancer Mortality, all sites by sex. Cuba 1970-1989, 1990-1999, 2000-2022



Cancer death by sex and main sites. Cuba 2022

MALE				FEMALE			
SITES	No	CR	WSR	SITES	No	CR	WSR
Prostate	4040	72,7	35.0	Lung and Bronchus	2141	38.1	18.9
Lung and Bronchus	3166	56,9	25.3	Breast	1904	33,8	13.4
Colon	1176	21,2	9.6	Colon	1513	26,9	11.1

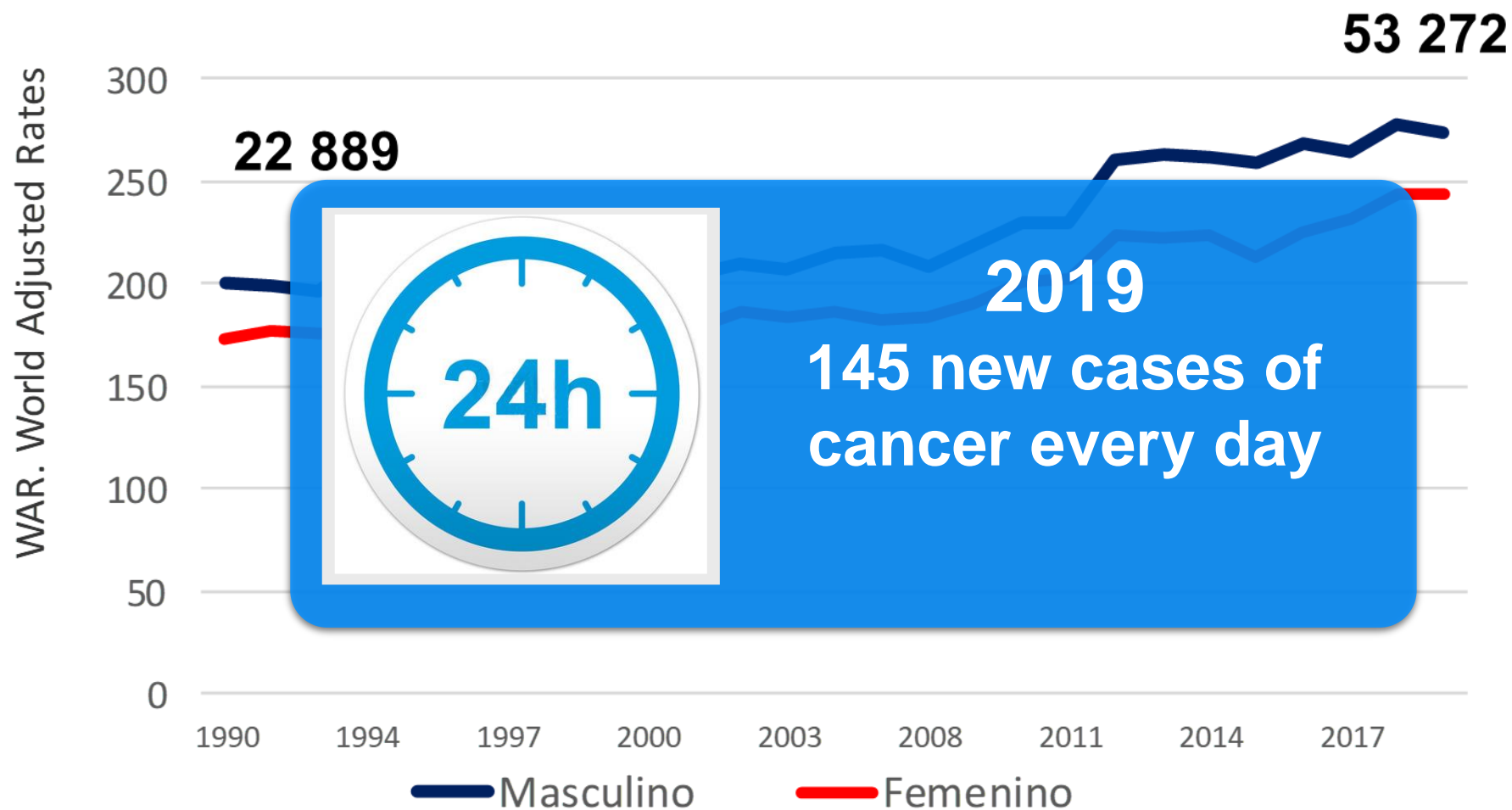
four sites account 50% of all cancer deaths

All sites	15 450	277.9	138.4	All sites	11 341	201,6	92.9
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No. Number of cases, TC. Crude rates x 100 000 y WSR. World standardized rates x 100 000

Source: Mortality series. Medical Registries and Health Statistic Department. Cuban Ministry of Health. <https://instituciones.sld.cu/socientificas/files/2023/10/Anuario-Estadistico-de-Salud-2022.pdf>

Cancer incidence by sex. Cuba 1990-2019



Cancer Incidence by sex and main sites. Cuba 2019

MALE				FEMALE			
SITES	No	CR	WSR	SITES	No	CR	WSR
Skin	7129	127,6	70,1	Skin	6352	112,6	58,5
Prostate	4888	87,5	40,6	Breast	4351	77,2	42,3
Lung and Bronchus	3912	70,0	37,5	Lung and Bronchus	2761	49,0	24,1
Lips, oral cavity, Pharynx	1697	30,4	17,7	Colon	1769	31,4	14,3
Colon	1314	23,5	13,2	Cervix	1529	27,0	17,7

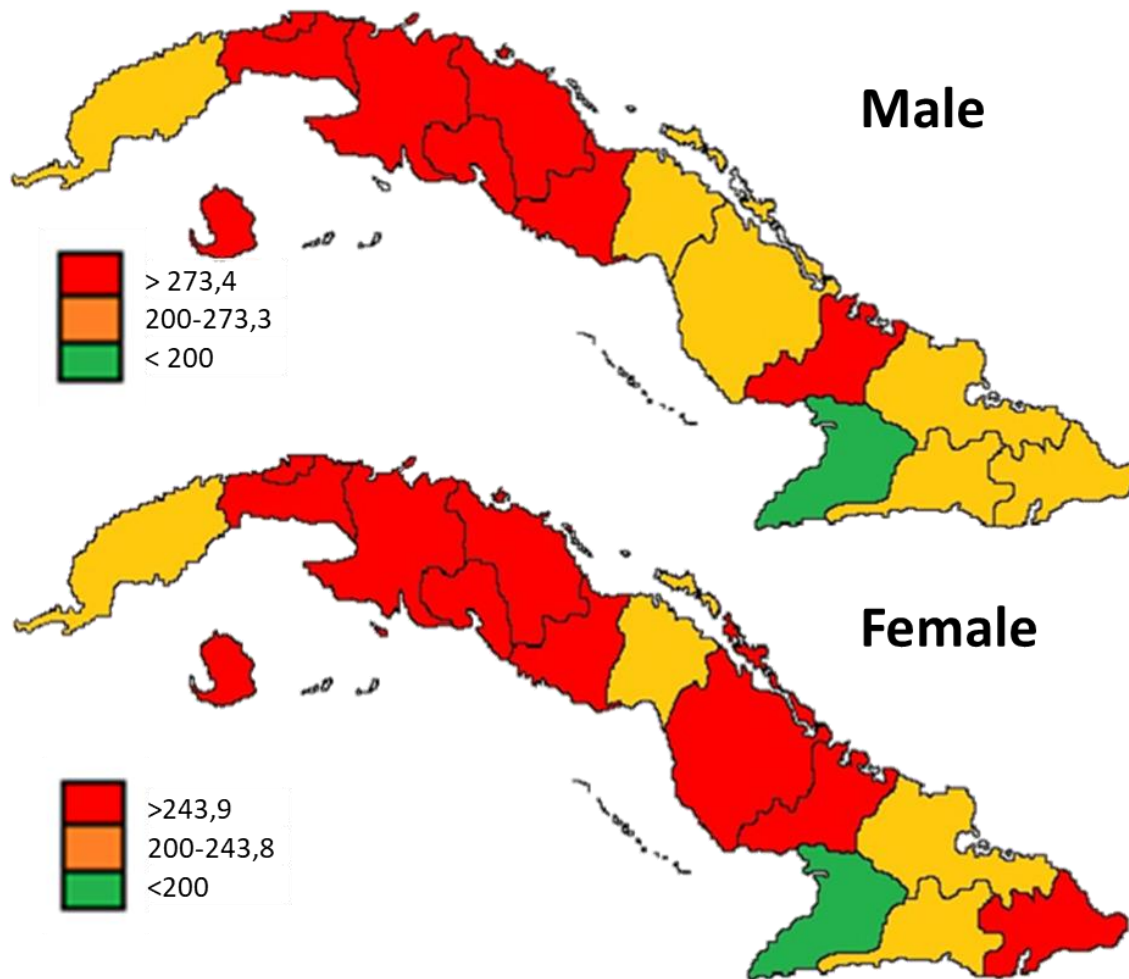
Five first sites by sex account more than 65% of all new cases

All sites	27857	498,5	273,4	All sites	25415	450,7	243,9
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No. Number of cases, TC. Crude rates x 100 000 y WSR. World standardized rates x 100 000

Source: Mortality series. Medical Registries and Health Statistic Department. Cuban Ministry of Health. <https://instituciones.sld.cu/socientificas/files/2023/10/Anuario-Estadistico-de-Salud-2022.pdf>

Geographical distribution of Cancer Incidence Cuba 2019.

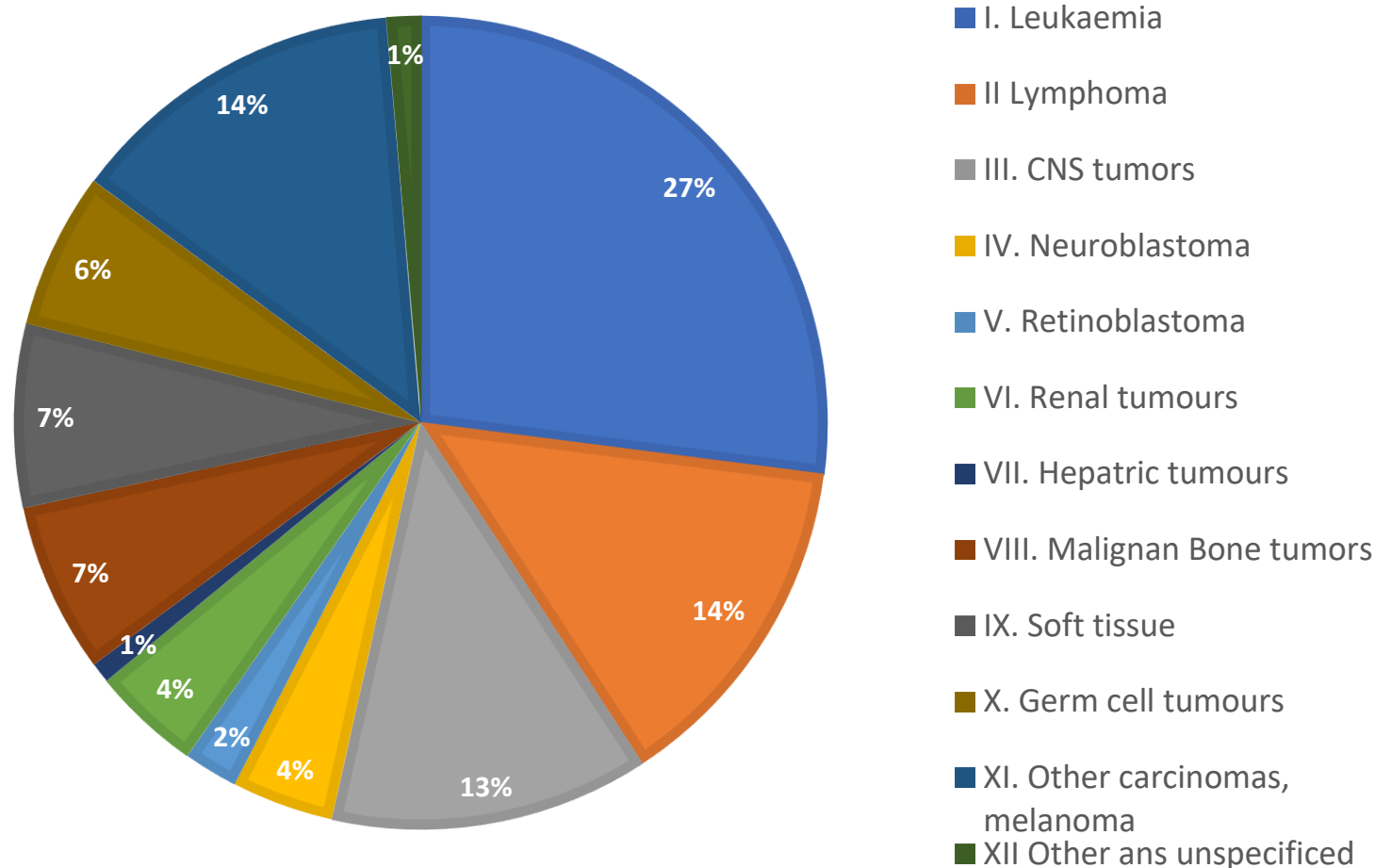


60% of new cases

- **La Habana** (21%),
- Matanzas (7.7%),
- **Villa Clara** (9.8%),
- Camagüey (6.6%),
- **Holguín** (9.6%)
- Santiago de Cuba (7.4%)

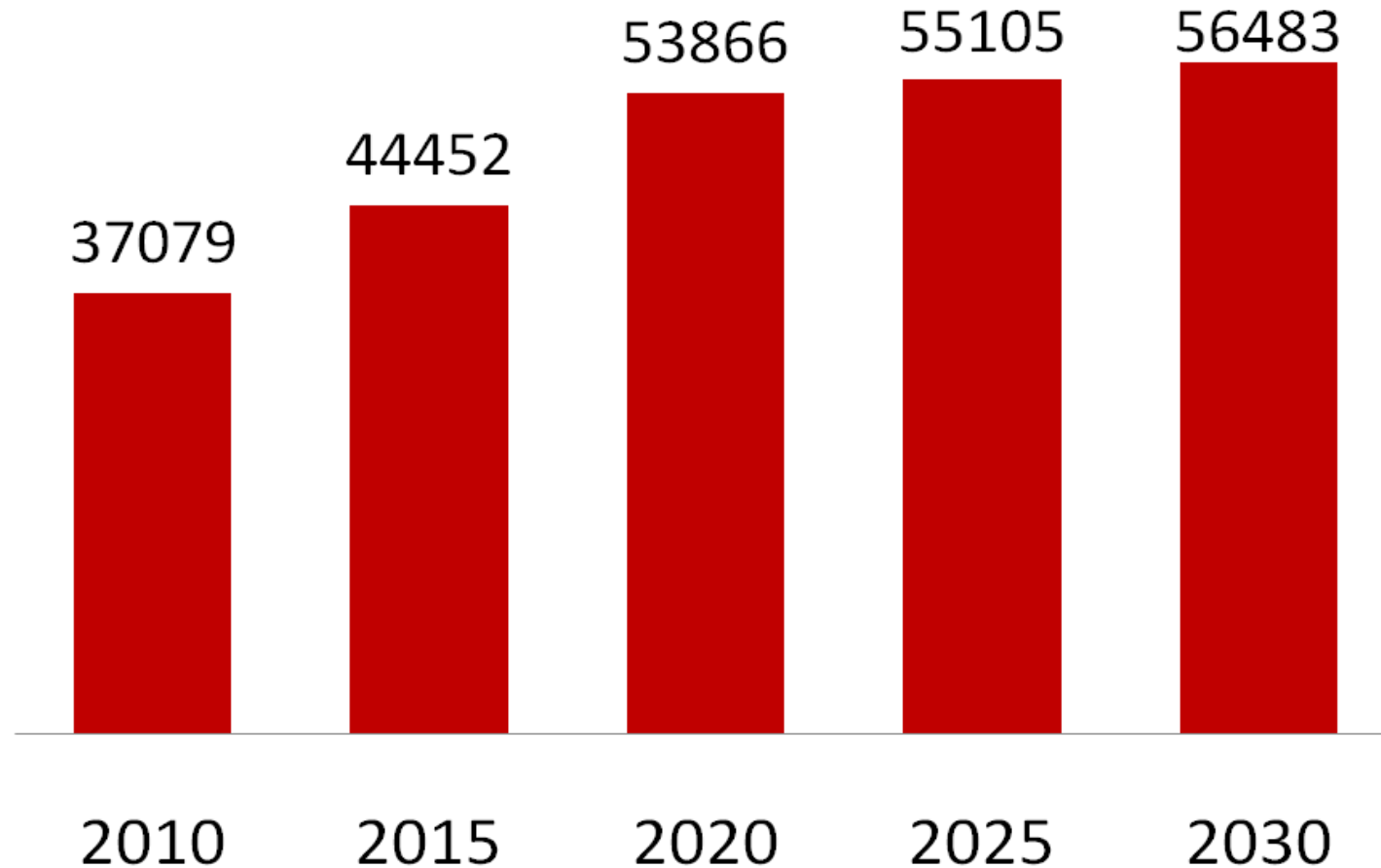
Cancer incidence in children and adolescent. Cuba 2019

- 1% of total cancer cases.
- In 2019, **370 new cases** were diagnosed (149.1 per 1000,000)
- In 2022, **77 children** (50% male) died from this cause.
- Mortality due to malignant tumors
 - 1st place in the group of 1-4 years (20%)
 - 2nd place in the groups of 5-14 (19%).



Cancer Burden

Estimated number of new cancer cases.
Cuba 2010-2030



Source: National Cancer Registry of Cuba

Cancer Control Program

**Coordinate and organize the efforts of
the health system and society in
combating cancer**

Principles of the Cuban Health System

- **Universal Coverage**
- **Free of charge**
- **Accessible to all**
- **Regionalized**
- **Comprehensive**
- **Internationalist Conception**

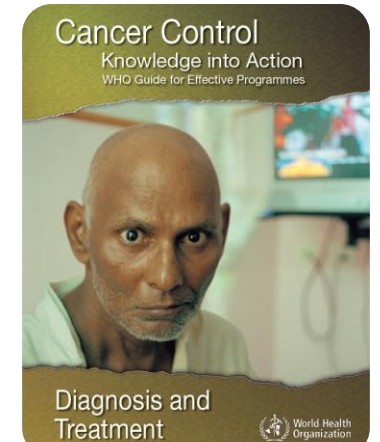
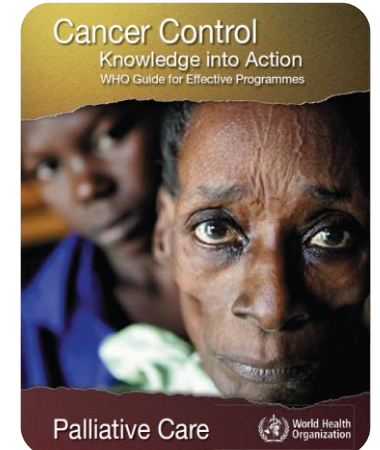
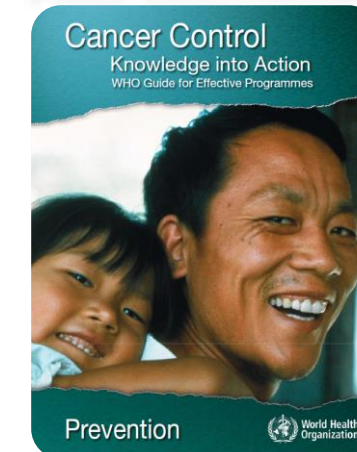
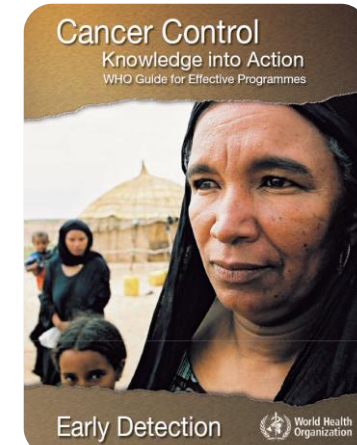
**Primary Care is
the corner stone
of the health
system**



Cancer Control Program

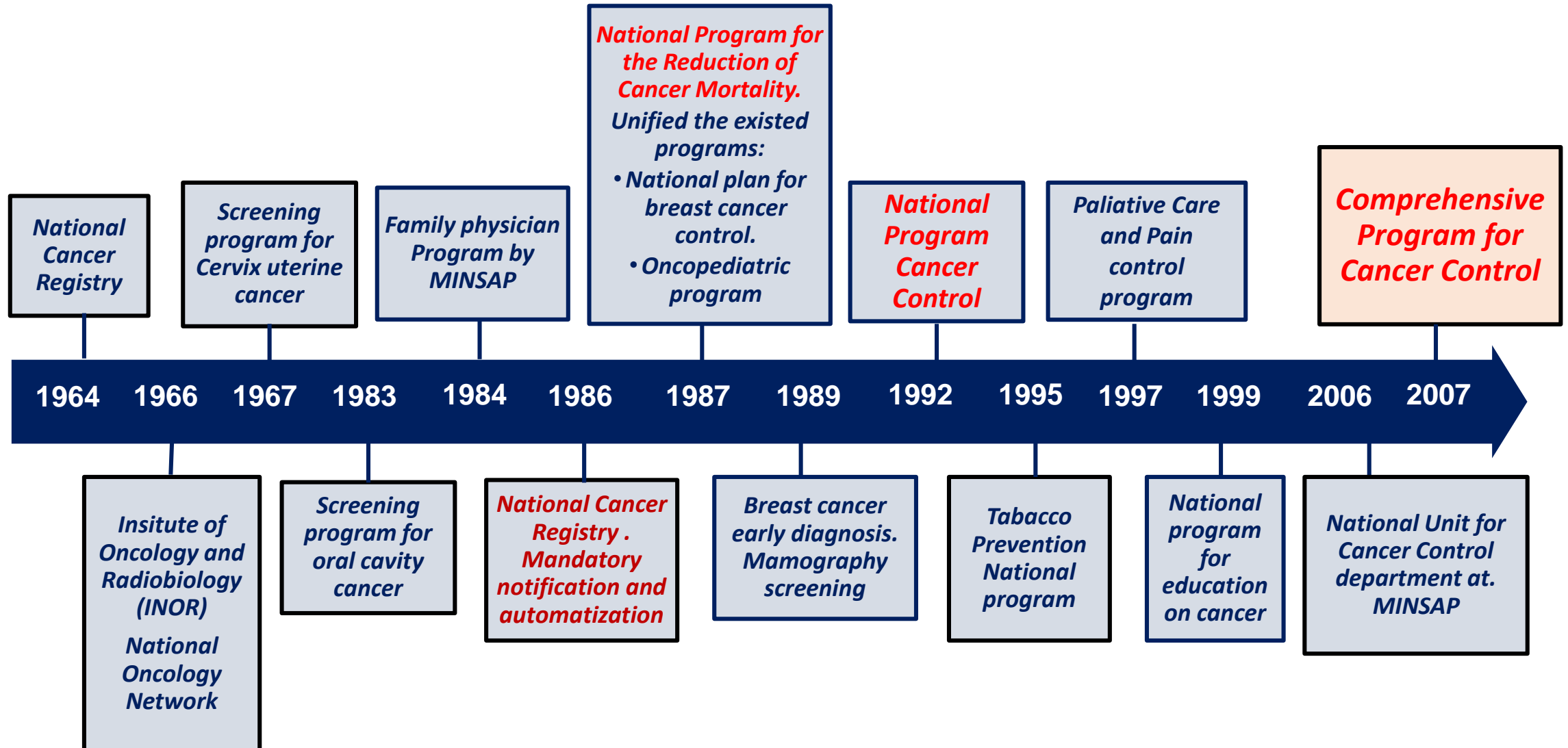
The essential components for cancer control according to the WHO

1. **Cancer Control Plan**
2. **Prevention**
3. **Early detection**
4. **Diagnosis and treatment**
5. **Palliative Care**



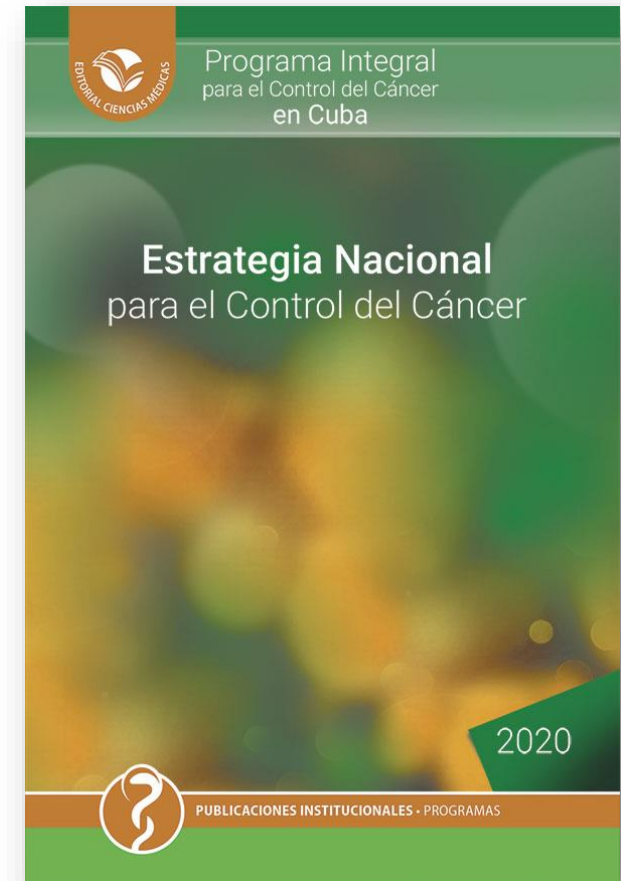
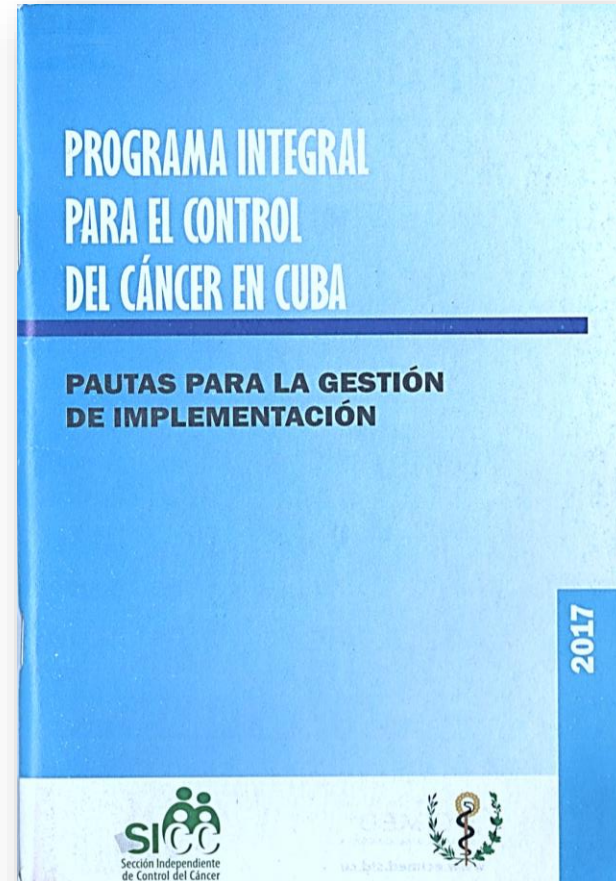
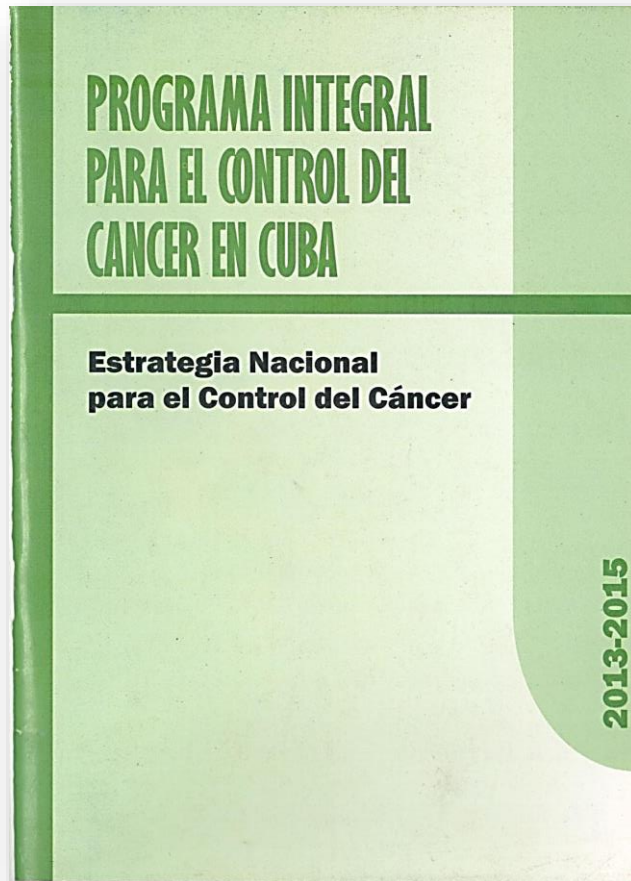
Comprehensive Cancer Control Program in Cuba

Strategic Action Guide for Cancer Control in Cuba

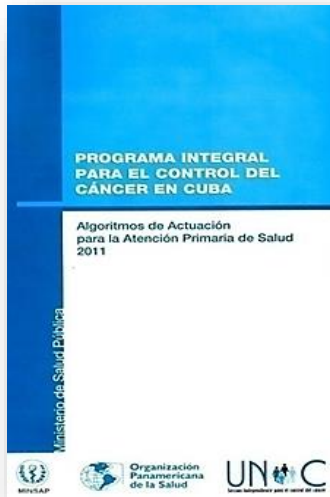
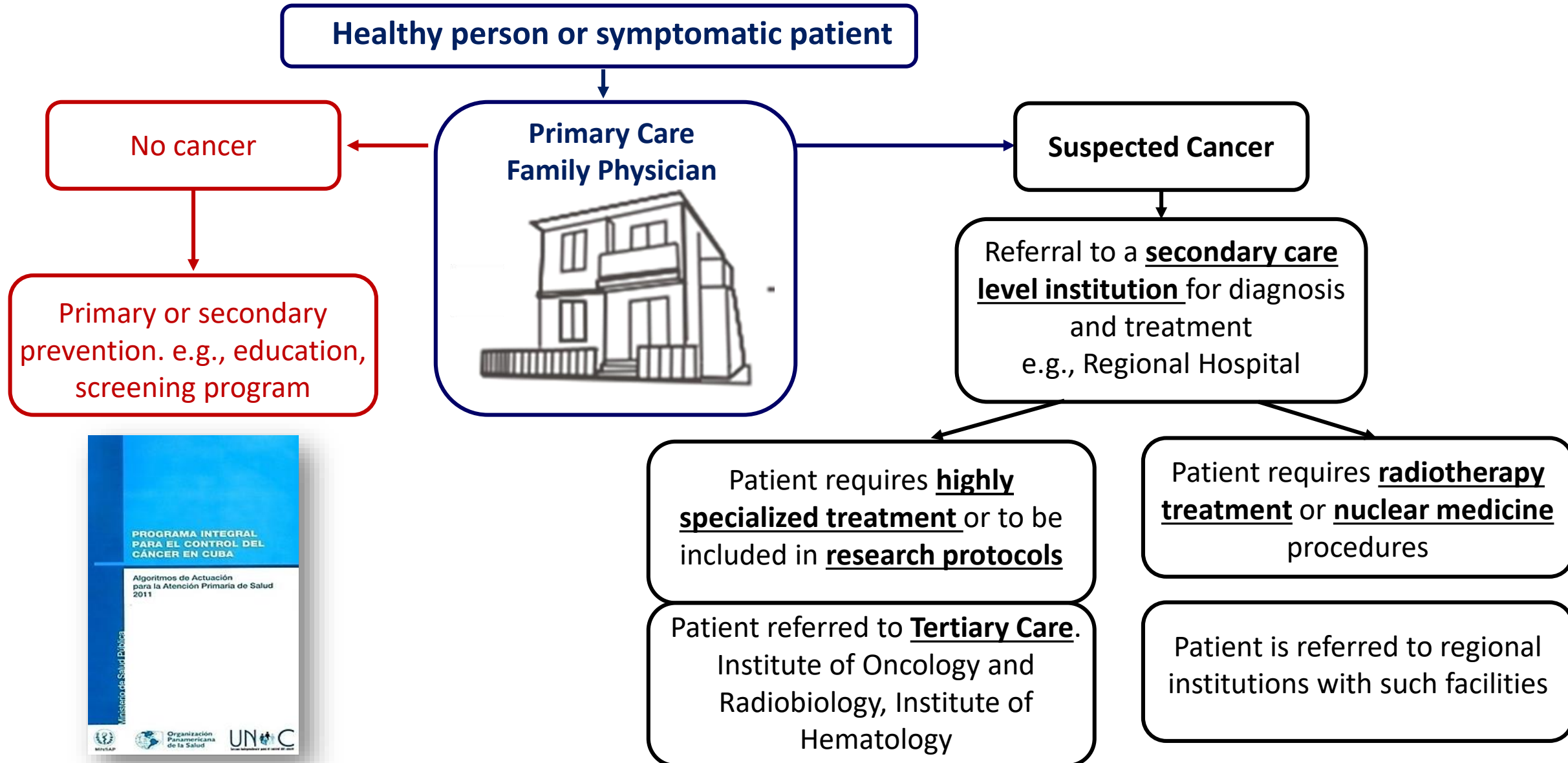


Comprehensive Cancer Control Program in Cuba

Framework Document for Cuba's Cancer Control Strategy and Interventions



Cancer patients flow through the healthcare system



Campaign aimed at modifying lifestyles and reducing risk factors.

EL CÁNCER se puede prevenir y se puede curar

Las posibilidades de curación son mayores cuanto más temprano se diagnostique

Consuma una dieta balanceada rica en frutas, cereales, legumbres y verduras



Sí al Control del Cáncer 

EL CÁNCER se puede prevenir y se puede curar

Las posibilidades de curación son mayores cuanto más temprano se diagnostique

Evite el consumo de tabaco, respete al no fumador



Sí al Control del Cáncer 

EL CÁNCER se puede prevenir y se puede curar

Las posibilidades de curación son mayores cuanto más temprano se diagnostique

En el trabajo use las medidas de protección, siempre que esté expuesto a elementos cancerígenos



Sí al Control del Cáncer 

EL CÁNCER se puede prevenir y se puede curar

Las posibilidades de curación son mayores cuanto más temprano se diagnostique

Modere la ingestión de bebidas alcohólicas



Sí al Control del Cáncer 

EL CÁNCER se puede prevenir y se puede curar

Las posibilidades de curación son mayores cuanto más temprano se diagnostique

Protéjase durante la exposición al Sol



Sí al Control del Cáncer 

Prevalence of selected risk factors (%).

Cuba 1995, 2001, 2010 y 2019

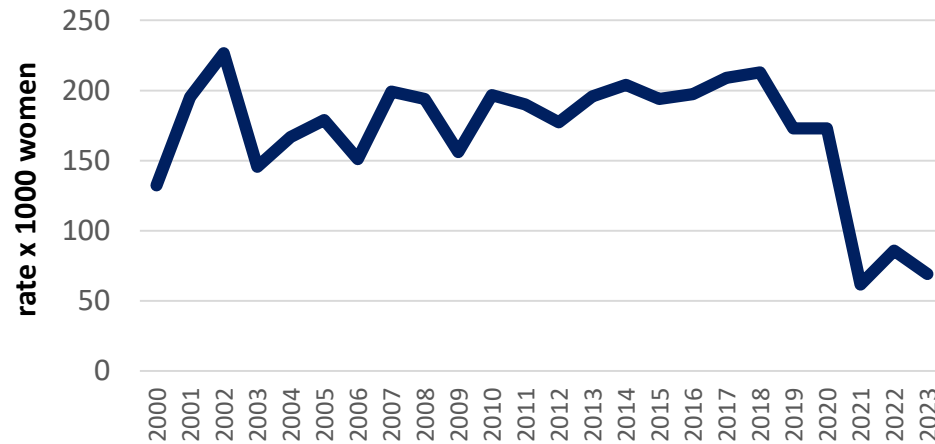
Risk Factor	1995	2001	2010	2019	Cancer Risk
Tabbaco	36.0	32.0	24.0	21,6	lung, larynx, pharynx, Oral cavity, bladder, cervix,
Hazardous drinking and alcohol dependence	8.0	7.7	7.8	7,7	Larynx, pharynx, Oral cavity
Overweight (BMI 25 to 29.9)	ND	42.6	46.3	56,4	Endometrium, Colorectal, breast
Obesity (BMI >30)	ND	11.8	15.4	21,0	Endometrium, Colorectal, breast
Inadequate physical activity	33.2	38.3	40,4	56,3	Colorectal, breast
High Blood Pression	30.6	33.5	31.9	37,0	

Data from urban populations.

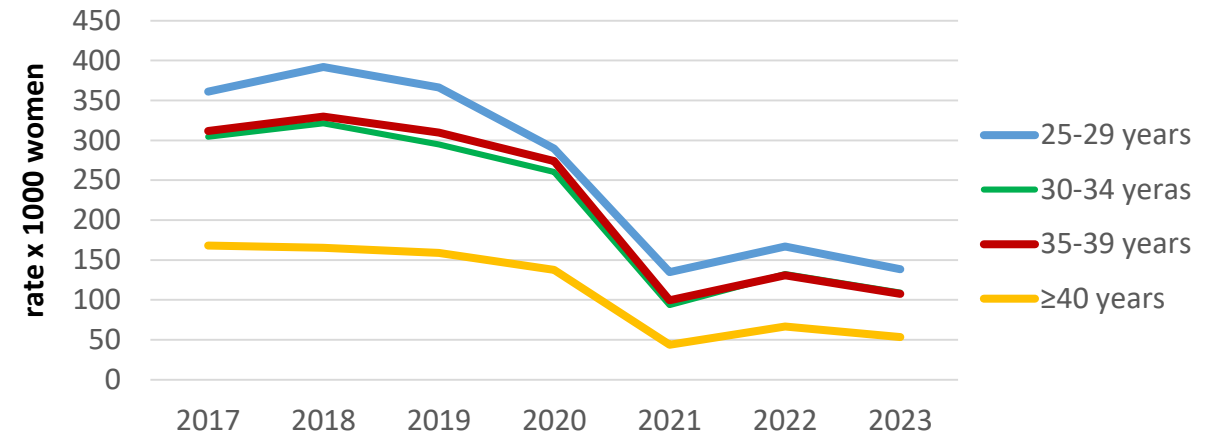
Source: III National Survey of Risk Factors and Preventive Activities for Non-Communicable Diseases. <http://www.bvscuba.sld.cu/libro/iii-encuesta-nacional-de-factores-de-riesgo-y-actividades-preventivas-de-enfermedades-no-trasmisibles-cuba-2010-2011/>

Early Detection Screening Programs

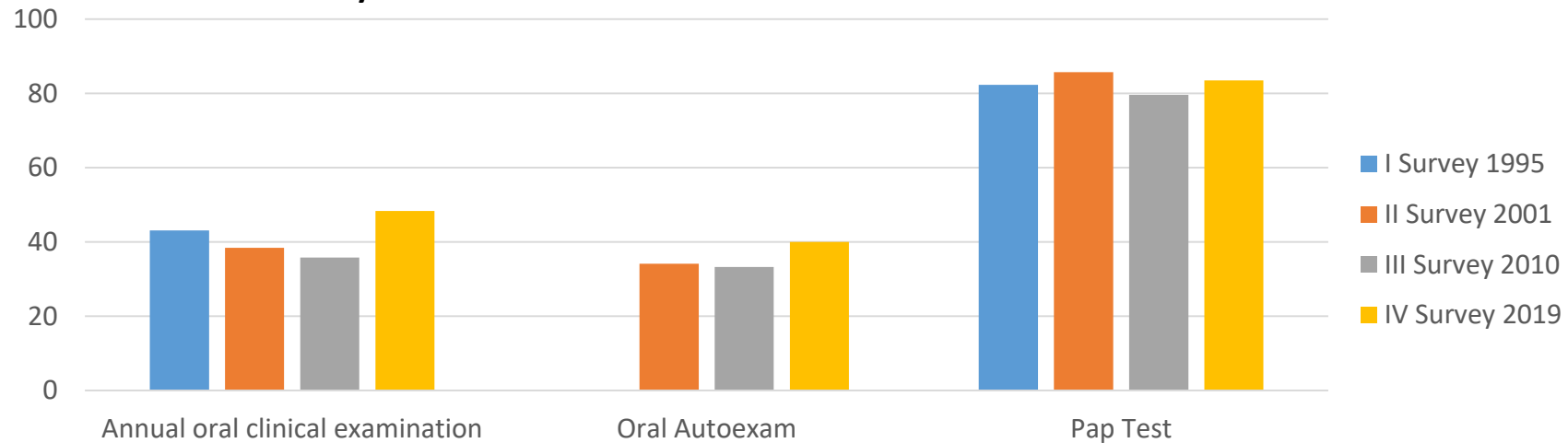
Cervix Uterine Cancer Screening Program. Women Screened, 2000 – 2023



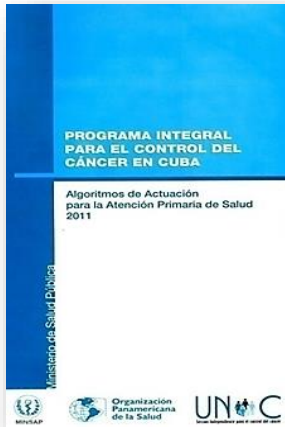
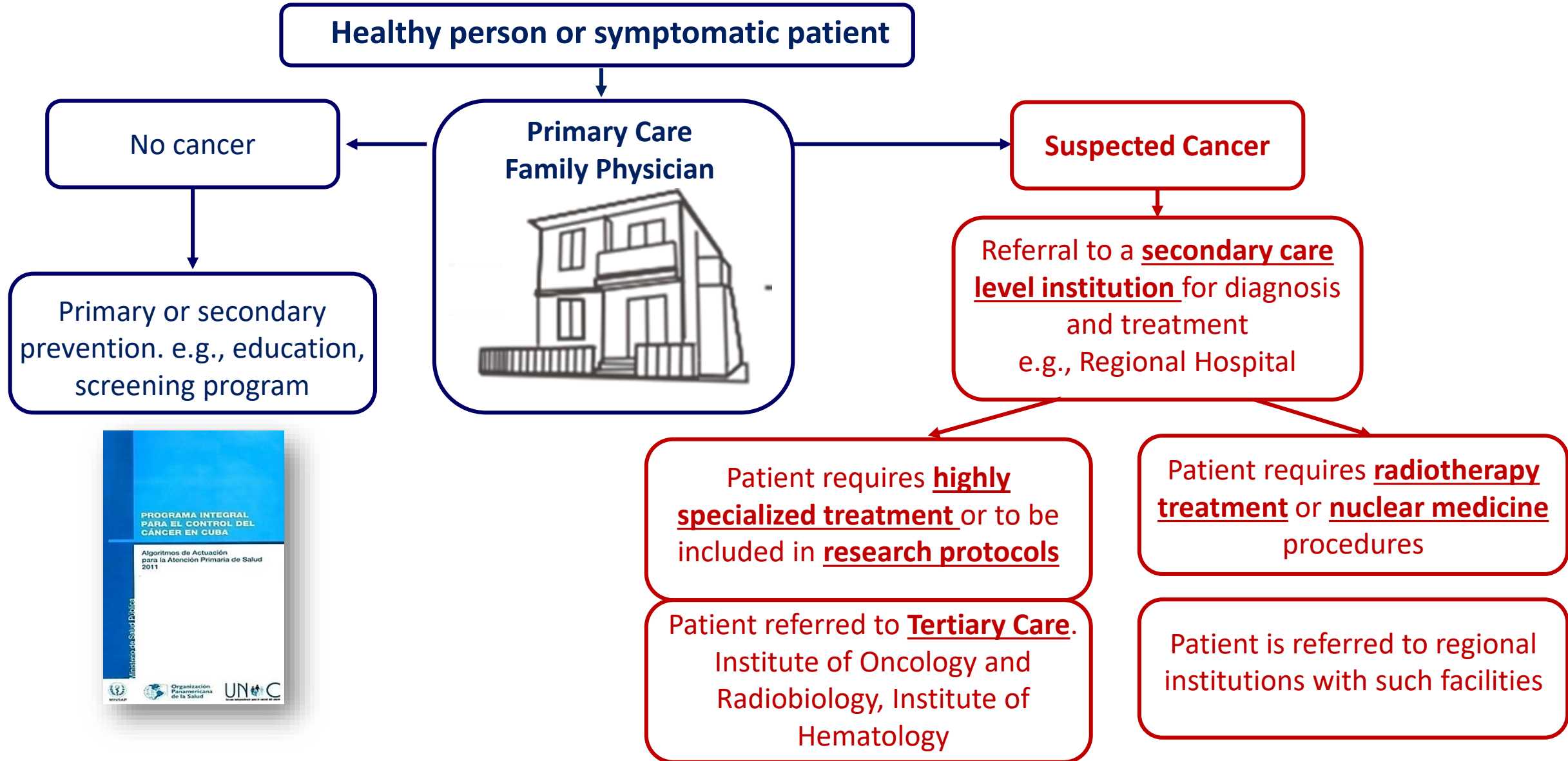
Cervix Uterine Cancer Screening Program. Women Screened by age group, 2017 – 2023



Oral Cavity and Cervix Uterine Cancer Screening Program. National Survey of Risk Factors and Preventive Activities for Non-Communicable Diseases

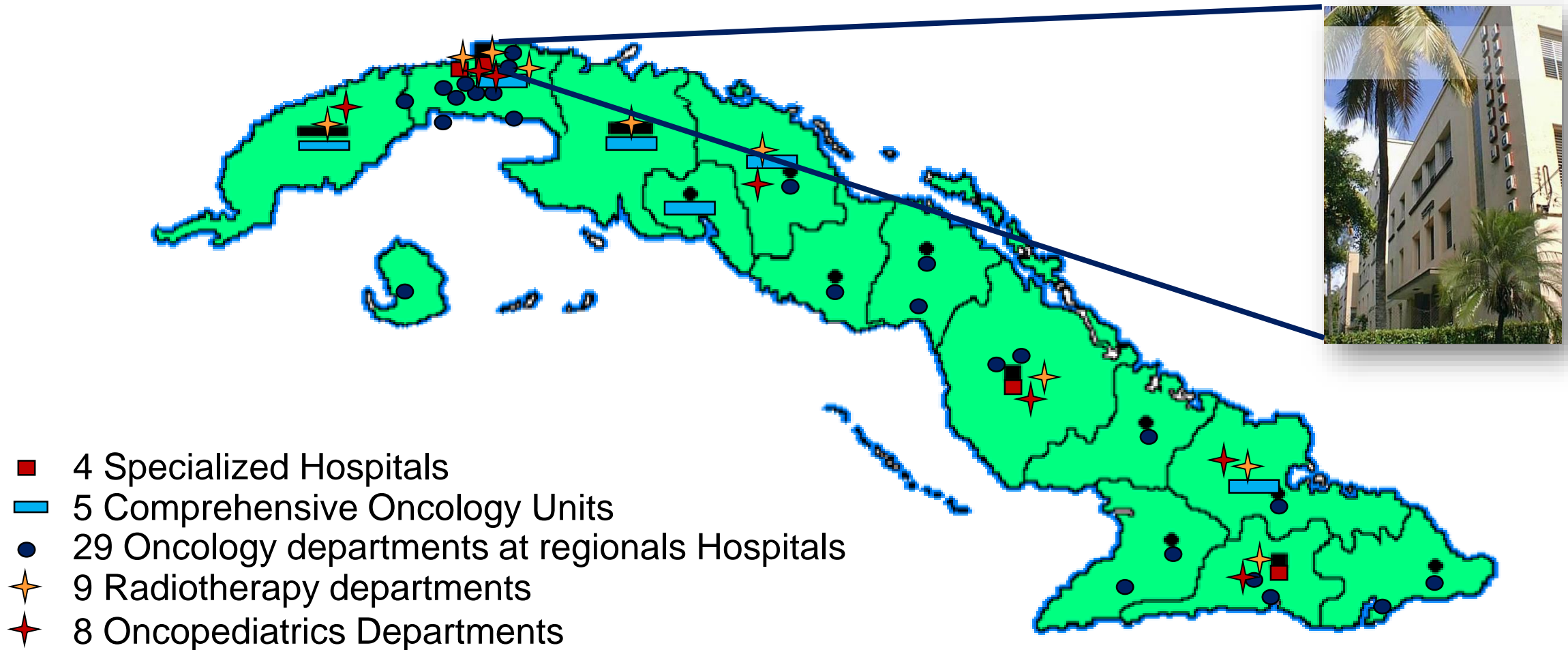


Cancer patients flow through the healthcare system



National Oncology Network

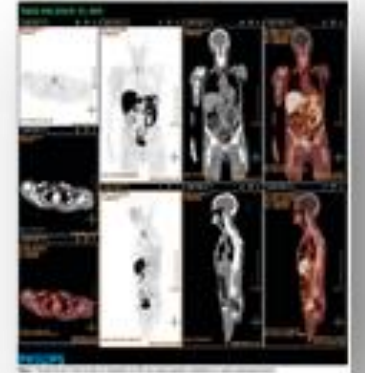
Units classified by level and complexity of treatments



Centralization of specialized and highly complex diagnoses

- Immunohistochemistry studies in three institutions. HHA, INOR, Celestino Hernández Hospital
- Molecular biology diagnostic for EGFR (tissue and liquid biopsy), KRAS and BRAF in two institutions
- PET-CT in three institutions
- High-field magnetic resonance imaging in four institutions

IHC



Biología Molecular

KRAS
BRAF
EGFR



Quality Assurance Program in Oncology

Classification of cancer care units according to complexity for diagnosis and treatment

Level 1	Level 2	Level 3
<ul style="list-style-type: none">• Introduction of new technology• Highly complex treatments• Radiotherapy facilities• High-tech diagnostics facilities, Imaging, Pathology (molecular biology, genetics, MN, PET)• Main centers for clinical trials.	<ul style="list-style-type: none">• Complex chemotherapy treatments requiring hospitalization and regionalized treatment• Conduction of clinical trials• Advanced diagnostic technology facilities (Pathology, Imaging)	<ul style="list-style-type: none">• Less complex chemotherapy treatment that does not require hospitalization• Participates in regionalized outpatient treatment.• Subordinated to level I and II units.• Basic diagnostic technology

Regionalization and flow of referral and counter-referral

Cancer patient care by multidisciplinary groups



Medical Oncology Directive No1/2007 Deputy Minister of Medical Assistance

First: Establish multidisciplinary teams in hospitals for the care of cancer patients. These teams will be coordinated by the Heads of Oncology Departments, and in hospitals where such a department does not exist, by an Oncology specialist.

Second: The treatment strategy for all cancer patients will be discussed by this multidisciplinary team to ensure proper planning, execution, and monitoring.

Tomando en consideración el trabajo que viene desarrollando la Unidad Nacional para el Control del Cáncer, unido al fortalecimiento recibido y proyectado por la Batalla de Ideas, los Programas de la Revolución en Salud, la lucha por la Excelencia, el desarrollo científico técnico y el capital humano disponible; se hace necesario dictar instrucciones sobre este tema, en la medida que el desarrollo y las condiciones así lo aconsejen.

Quality Assurance Program in Medical Oncology.

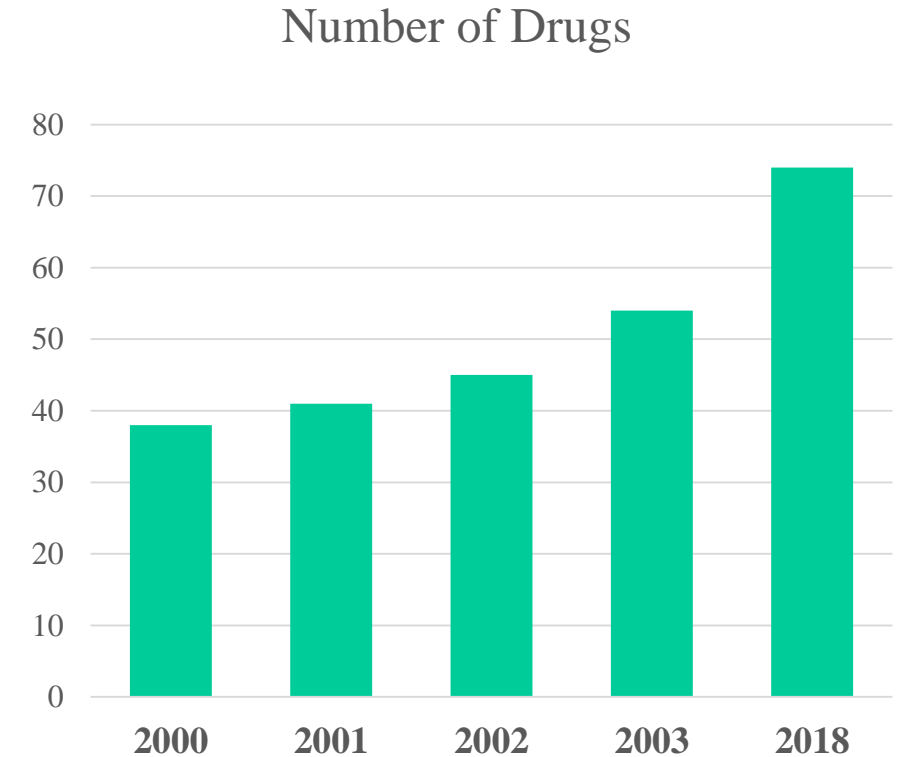
Oncology drugs plan

Establish a planning,
purchasing and distribution
policy in accordance with
real needs and
international standards

- Prioritize **major cancer sites**
- Classify malignant tumors according to their **degree of curability**, prioritizing those that benefit most from chemotherapy
- Adherence to **essential drugs** according to the WHO
- Review of **chemotherapy regimens by site** (Evidence-Based Medicine)
- Calculate the need for oncology products according to the **number of patients** (RNC) and by **clinical stage**.

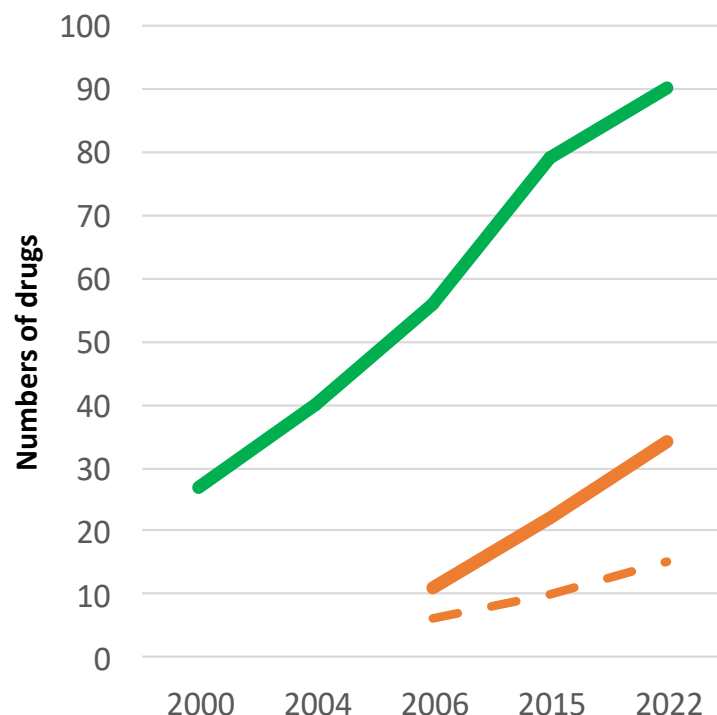
Quality Assurance Program in Medical Oncology.

- Introduce **generic drugs** of proven quality (on-site evaluation)
- Gradual replacement of imported drugs with **domestically manufactured** ones. MINSAP-BIOCUBAFARMA integration
- Dedicate substitution resources to the **incorporation of new drugs**
- Progressive coverage with newly incorporated drugs, annual growth
- Focus the incorporation of drugs on the **most effective and efficient scenarios** within an indication (EBM)



Oncology Drugs Plan

List of Oncology Drugs



2023 Cuban Pharmaceutical Industry
 > 30% of all oncology drugs
 > 40% of the cytotoxic drugs

Essential drugs for oncology WHO

Drugs group	WHO	CUBAN WHO essentials	CUBA others
Cytotoxics	35	33	
Targeted therapies	10	4	3 + 11*
Homone therapies	9	8	1 + 1*
Immunotherapy	4	4	3
Soportive care drugs	4	3	1
Pain and paliative care	21	<u>17</u>	3
Total	74	69	11 + 12

* Complimentary list (12 High cost antineoplastic drugs under evaluation for incorporation in the list of essential drugs)

Integration between MINSAP and Cuban pharmaceutical industry

- Policy for the incorporation of proven quality **generic and biosimilar drugs**
- Development and production of **diagnostic technologies**.
- Development and production of **innovative drugs** for cancer treatment.
- Development of **laboratory reagents** for patient evaluation.



Vaxira



Filgrastin



Nimotuzumab



HeberFeron



Hebersavax



CimaVax EGF



FOBT



EPOCIM



Hepatitis B vaccine



AICA Citostatic Lab

Cuban Guidelines for diagnostic and treatment

Evidence-based, but adjusted to the Cuban context



<http://www.ecimed.sld.cu/2019/12/05/programa-integral-para-el-control-del-cancer-en-cuba-diagnostico-y-tratamiento-del-cancer-de-cabeza-y-cuello/> , <http://www.ecimed.sld.cu/2025/04/15/oncopediatria-guia-de-tumores-frecuentes/> ,
<http://www.ecimed.sld.cu/2020/01/28/programa-integral-para-el-control-del-cancer-en-cuba-diagnostico-y-tratamiento-del-cancer-de-prostata/> , <http://www.ecimed.sld.cu/2021/01/15/programa-integral-para-el-control-del-cancer-en-cuba-manual-de-radioterapia-oncologica-tomo-i/> , <http://www.ecimed.sld.cu/2025/05/23/manual-de-radioterapia-oncologica-en-pediatria/> , <http://www.ecimed.sld.cu/2023/08/02/prevencion-diagnostico-y-tratamiento-del-cancer-de-piel/> ,

Health Workforce Training Program

- **Residence programs:**

- Medical Oncology
- Radiotherapy
- Surgical Oncology.
- Oncology Nursing
- *Nuclear Medicine y Medical Physic (forthcoming)*

- **Fellows**

- Oncology nursing, Medical physic, Cytopathology, Psycho-Oncology

- **Masters**

- Oncology Nursing,
- *Breast Cancer and Onco-pediatrics (forthcoming)*

- **Training courses and internship**

- Head & Neck Surgery, Breast Surgery, Reconstructive surgery, Soft tissue and Bone tumours surgery, Onco-pediatrics, Thoracic tumours, Gastrointestinal tumours surgery, Genitourinary Tumours, Gynaecological tumours.

Residents	258
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Medical Oncology	164
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Radiotherapy	8
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Surgical Oncology	42
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Oncology Nurse	44
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Proffesors	278
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• Full Professor	26
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• Assistant	104
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• Associated	73
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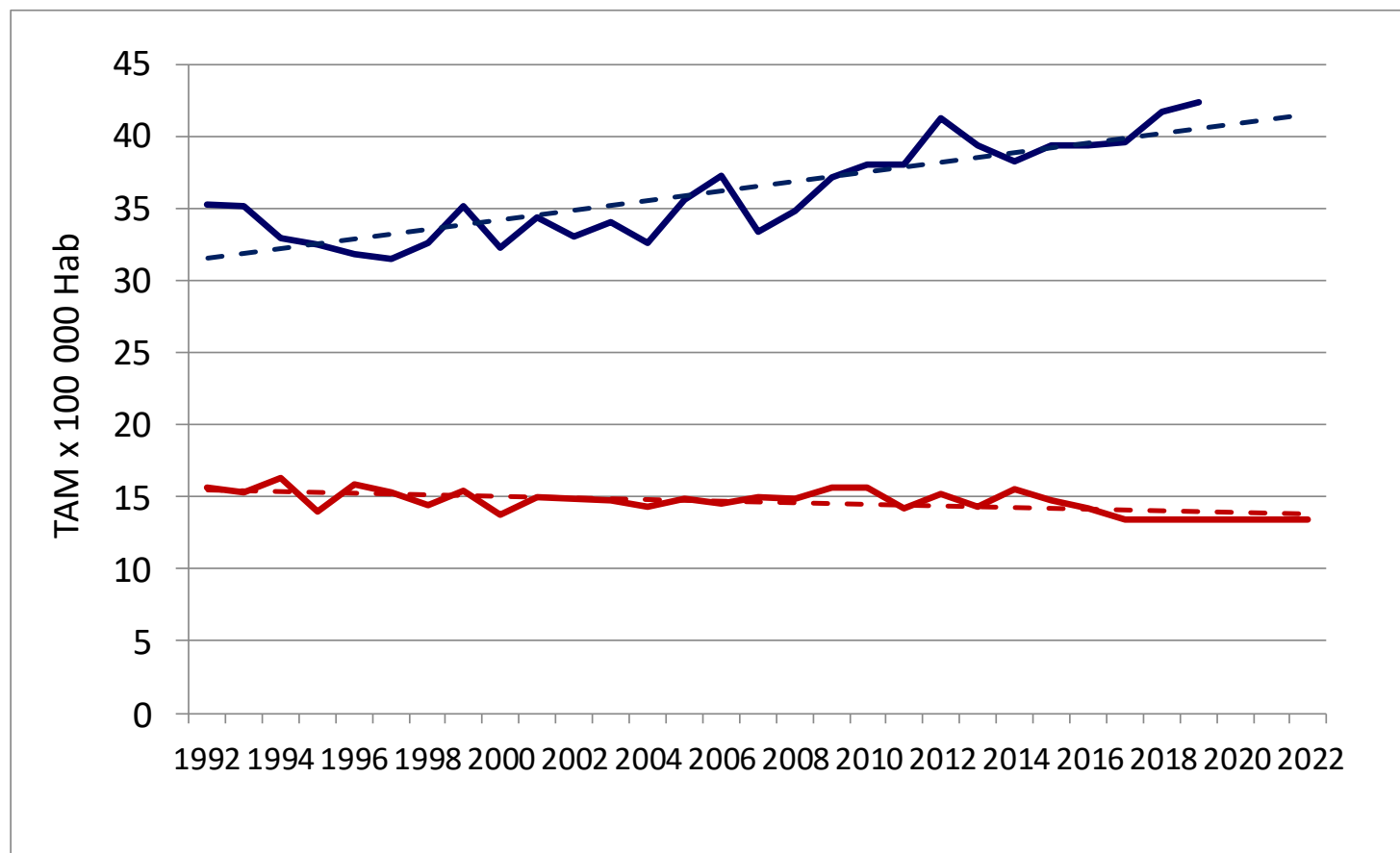
• Instructor	62
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• <u>Emeritus</u>	3
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• <u>Consultant</u>	10
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***Cancer Control Through the Breast Cancer
Experience***

Breast Cancer Incidence and Mortality Cuba 1990-2019/2022



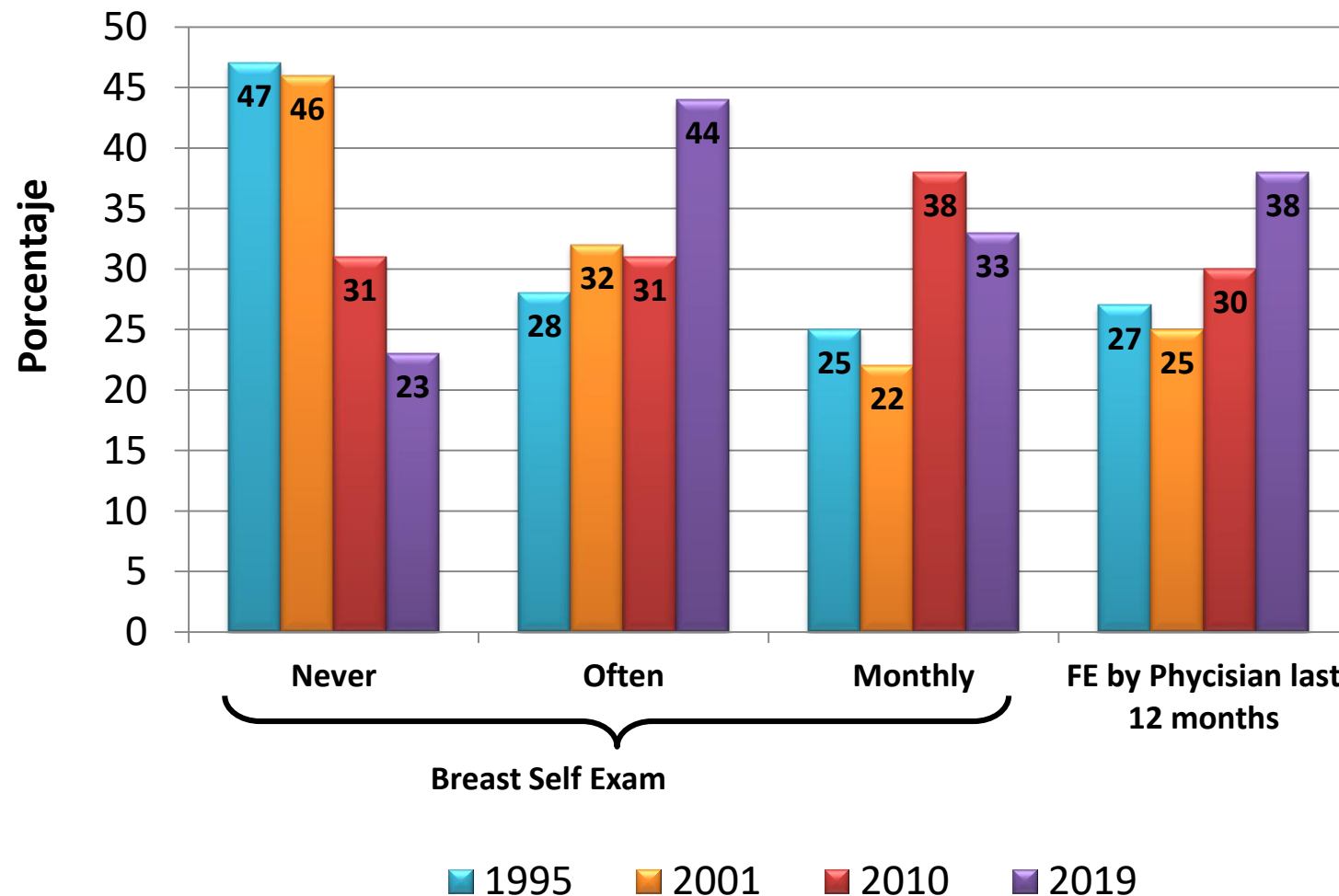
***2nd cause of cancer
incidence and mortality
in women***

***17% of all new cancer
cases and 17% of all
cancer death in women***

TAM: tasas ajustadas a la población mundial x 100 000

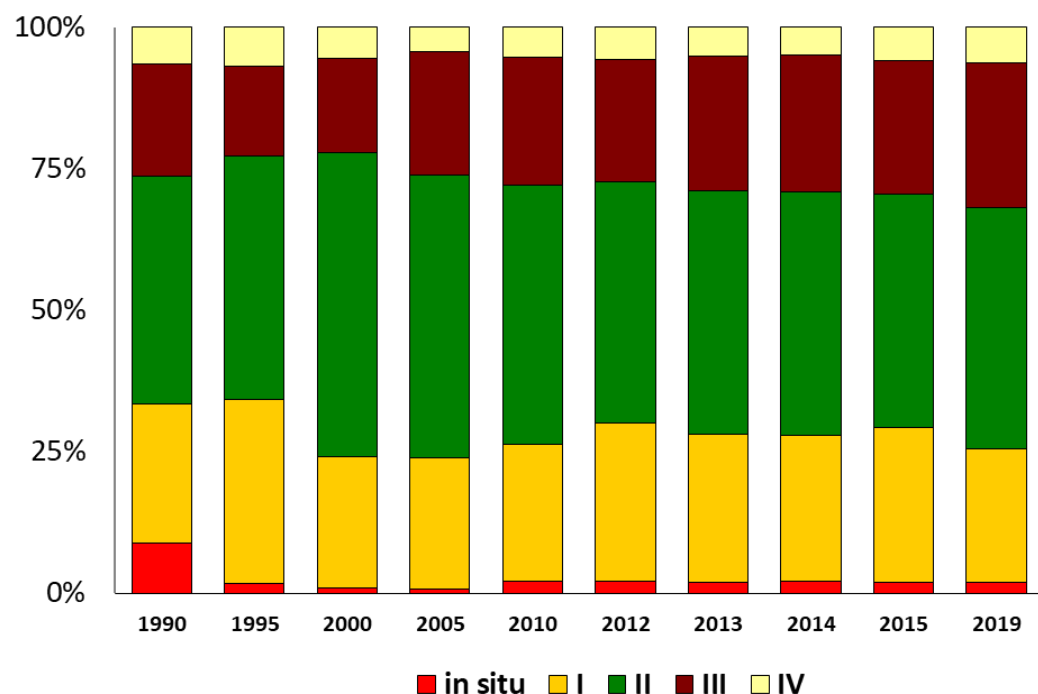
Women's education and risk perception

- Family Physician
- Family nurse
- Voluntaries
- Civil Society (NGOs, patients societies)
- Education
- TV Spot
- Radio
- Magazines, newspapers, journals



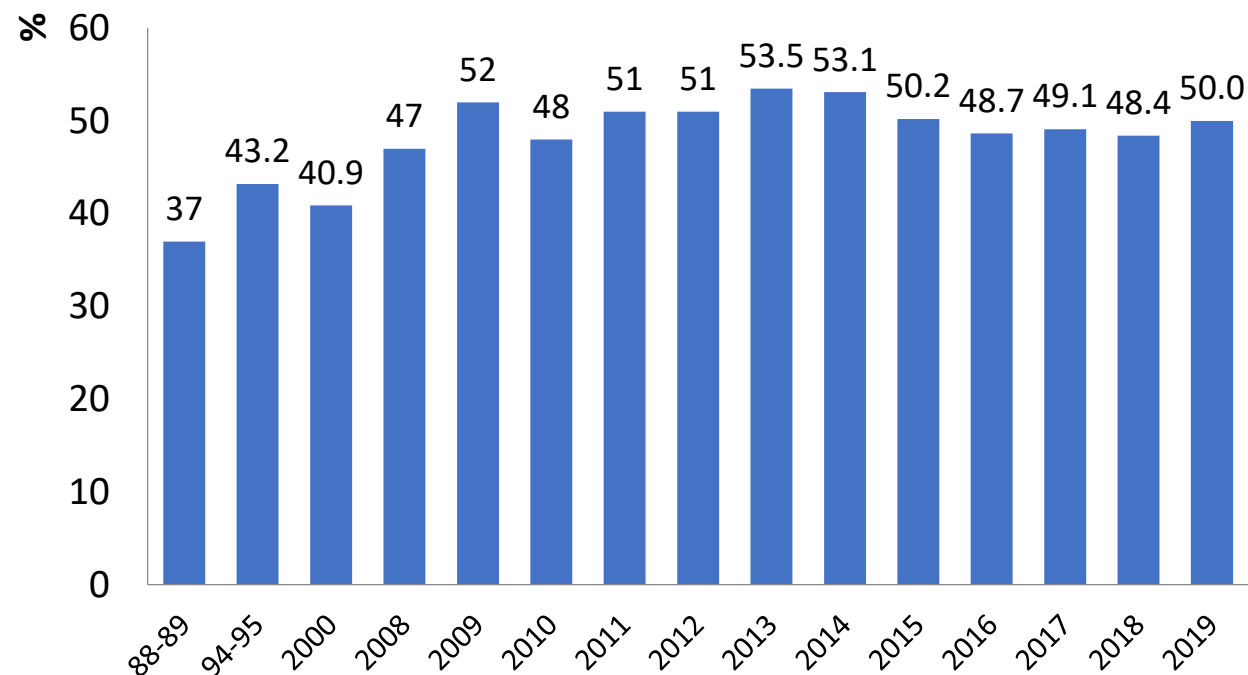
Most breast cancer are diagnosed in early stage

Breast cancer. Distribution by clinical stage. Cuba 1990-2019



70 -75% diagnosed in stage I-II

Breast cancer. Localized disease (N0) at diagnosis. Selected years



50% diagnosed without axillar lymph node involvement

Access to treatment

Ministry of Public Health's list of drugs

Citotoxic drugs

- Ciclofosfamide
- **Doxorubicine**
- **Paclitaxel**
- **Docetaxel**
- **Methotrexate**
- **5-fluoracil**
- **Carboplatin**
- Capecitabine
- **Gemcitabine**

Target Therapy

- Trastuzumab
- Phesgo
- T-DM1

Endocrine therapy

- Tamoxifeno
- Letrozole
- Goserelina
- Fulvestrano

Supportive care

- **Zoledronic Acid**
- **Dexametasone***
- **Ondansetron***
- **Granisetron**
- **G-CSF**
- **Erythropoietin**
- Calcio/D3

Radiotherapy

- Hypofractionate protocols

Surgery

- SNB
- Reconstructive surgery
- High rates of BCS

IN RED. Drugs produced by Cuban biopharmaceutical

* Both presentation PO and IV

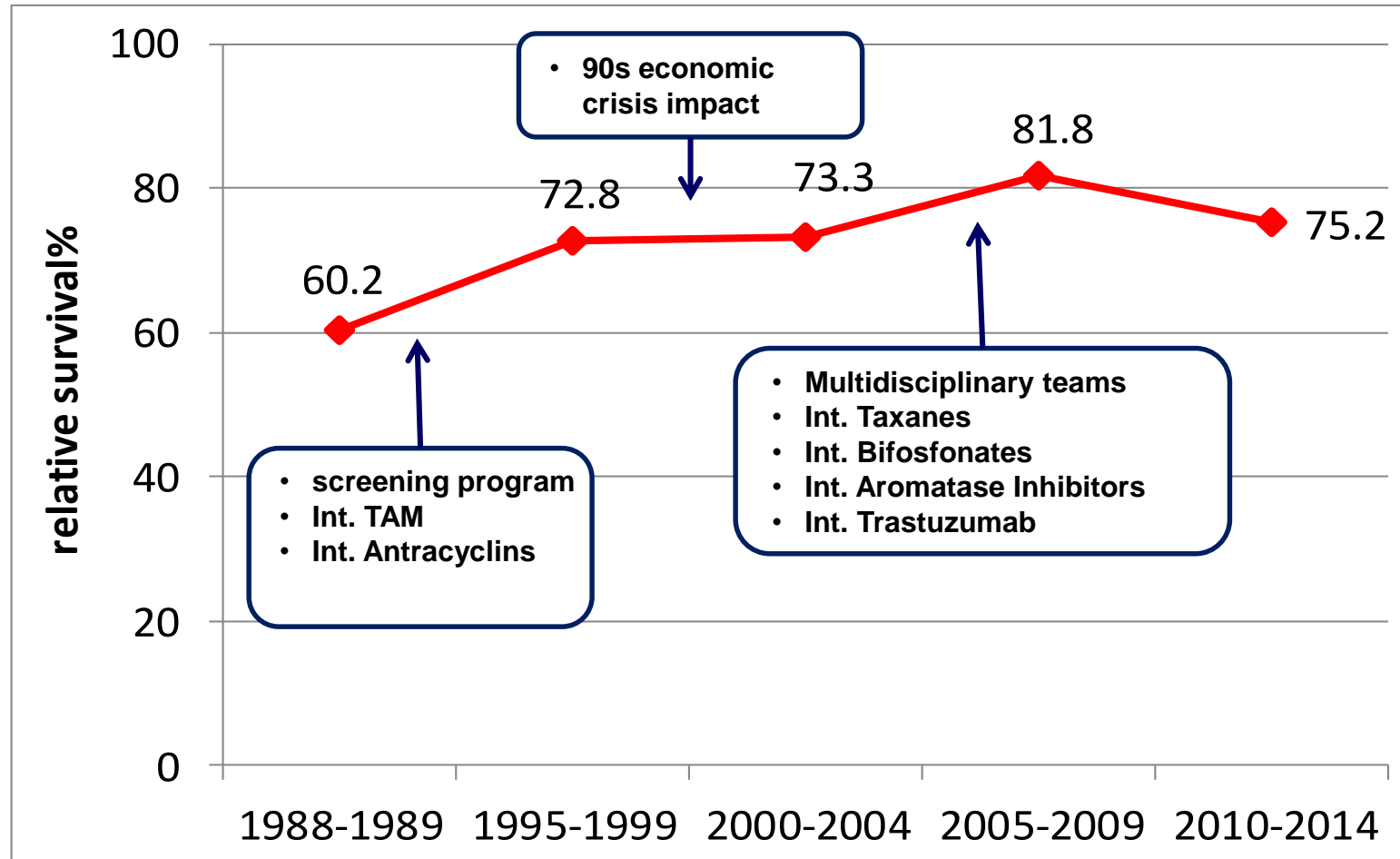
Multidisciplinary approach

- Medical Oncology
- Radiotherapy
- Surgical Oncology
- Reconstructive Surgery
- Pathology
- Radiology
- Phyco-Oncology
- Nuclear Medicine
- Geriatric- Oncology





Breast Cancer. 5-years relative survival



Global Surveillance of Cancer Survival: CONCORD-2, CONCORD-3

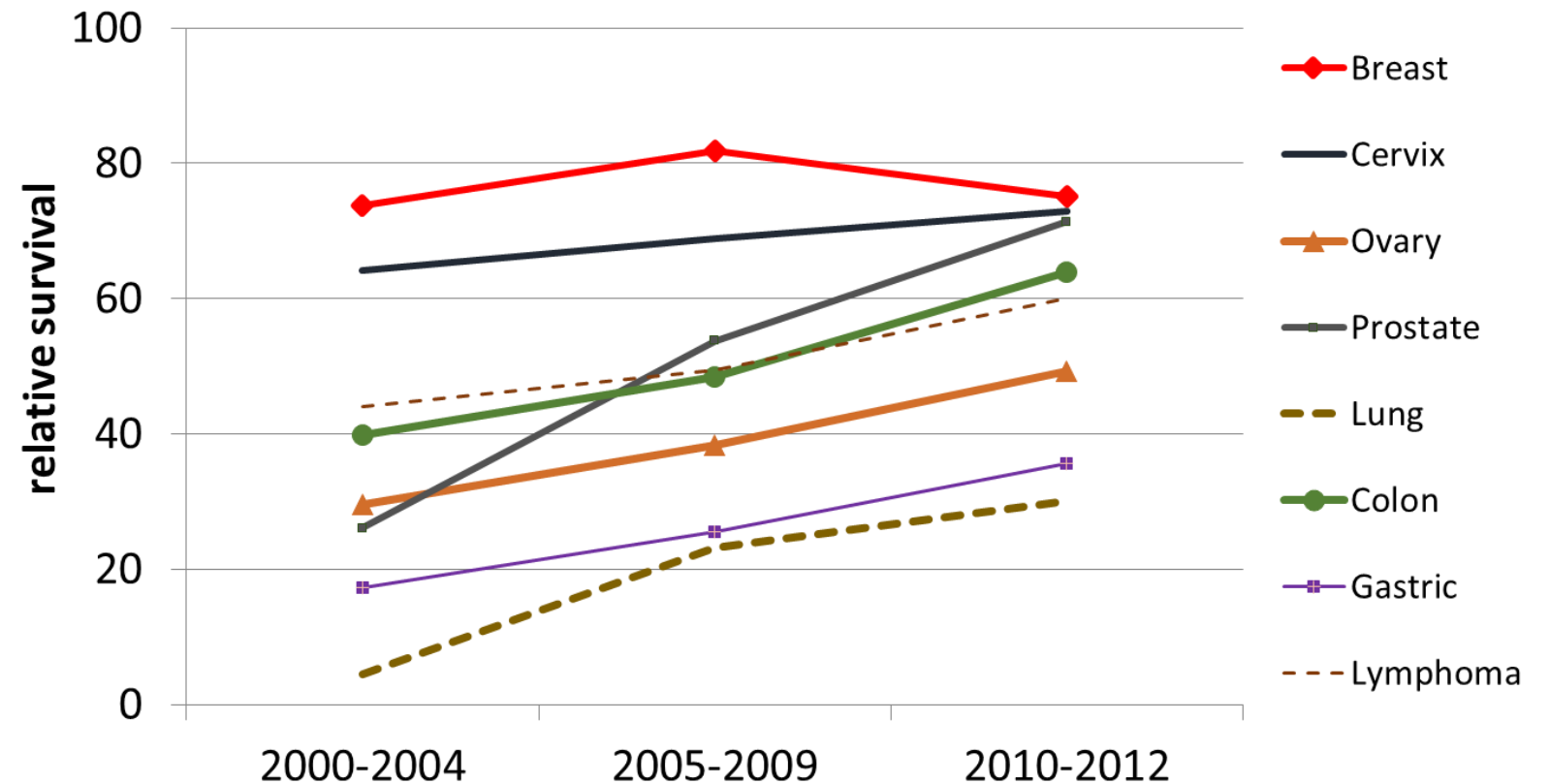
Population cancer survival is a useful tool to evaluate the effectiveness of health systems, and to inform global policy on cancer control

	CONCORD 2	CONCORD 3
Participants	25.9 MILLONES	37.5 millones
Cancer Registries	279 (67 countries)	320 (71 countries)
Period	1995-2009	1995-2014
Tumour Sites	10	18
	Gastric, Colon, Rectum, Liver, Lung, Breast (women), Cervix uterine, Ovary, Prostate, Leukemia	Oesophagus, Pancreas, Melanoma skin, CNS, Leukemias y Lymphomas in childhood

Cuba data in CONCORDs studies

Sites	No of cases	
	Concord 2	Concord 3
Gastric	5 026	6 664
Colon	11393	15 047
Lung	25654	19 344
Breast	18757	33 313
Cervix	10726	16 396
Ovary	3551	4 560
Prostate	14 372	21 358
Lymphoma	-	8 451
Total	89 519	125 133

Increasing trends in 5-years relative survivals by cancer sites



Cuba's National Cancer Control Program
Current Challenges

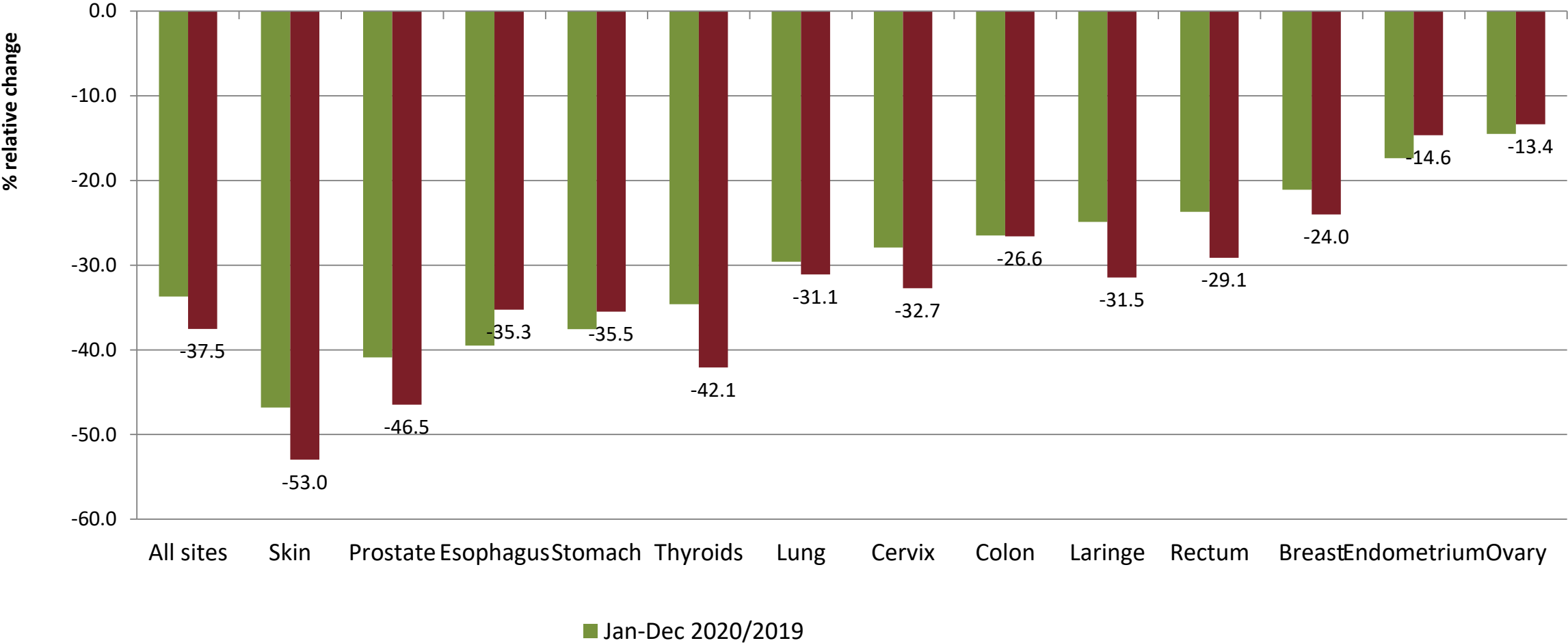
The **US economic embargo** have made it difficult to acquire medicines, materials recourses, radiotherapy and diagnostic equipment

Current Challenges

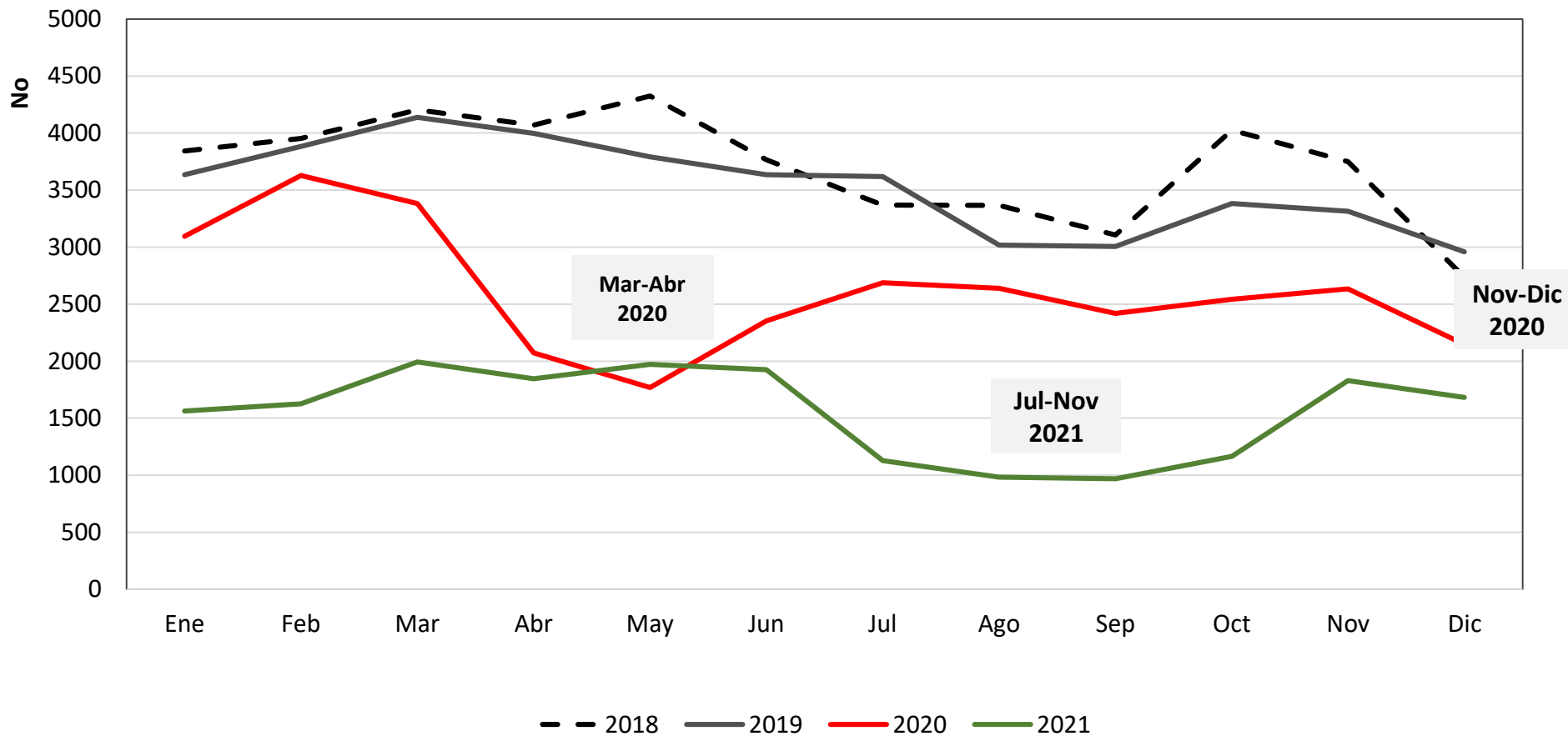
- Impact of the **COVID-19** pandemic

Impact of the COVID-19 pandemic on cancer

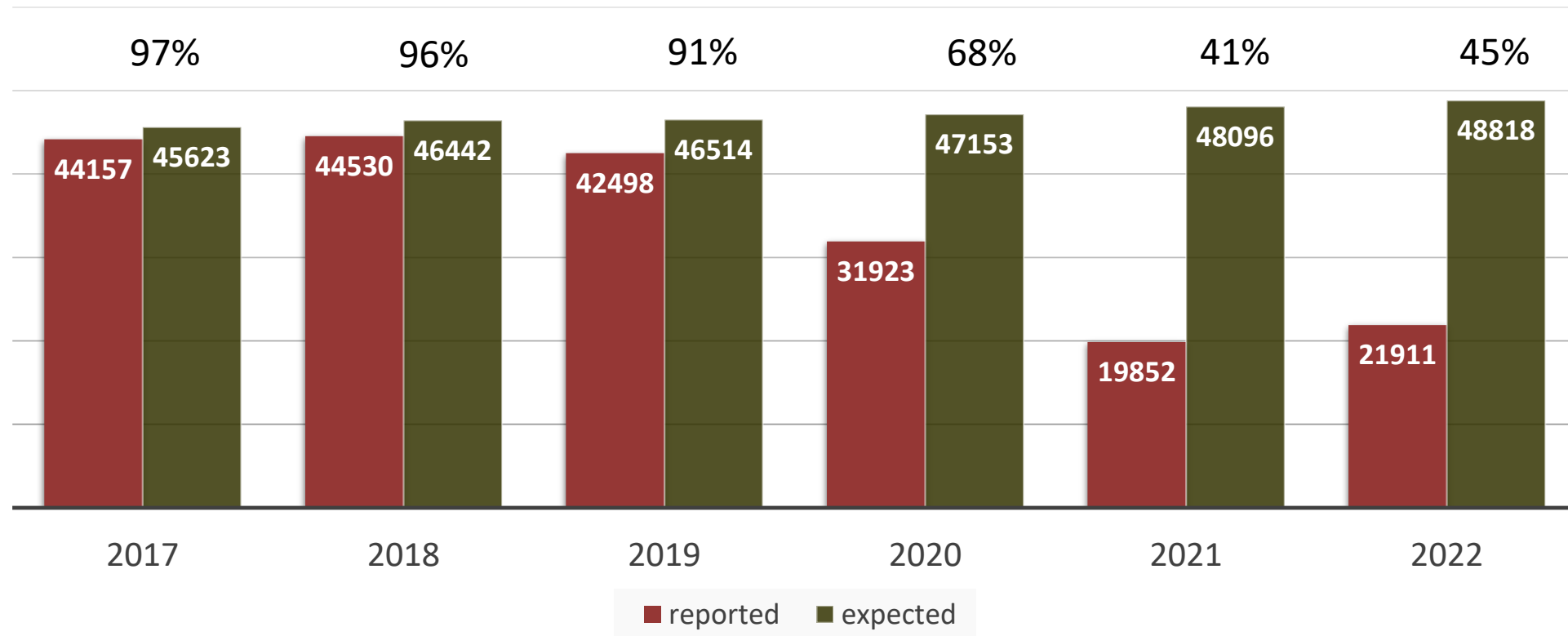
Decrease in the number of new cases reported in Cuba by location in 2020 compared to 2019



Number of reported cases by month/year of diagnosis in Cuba 2018-2021

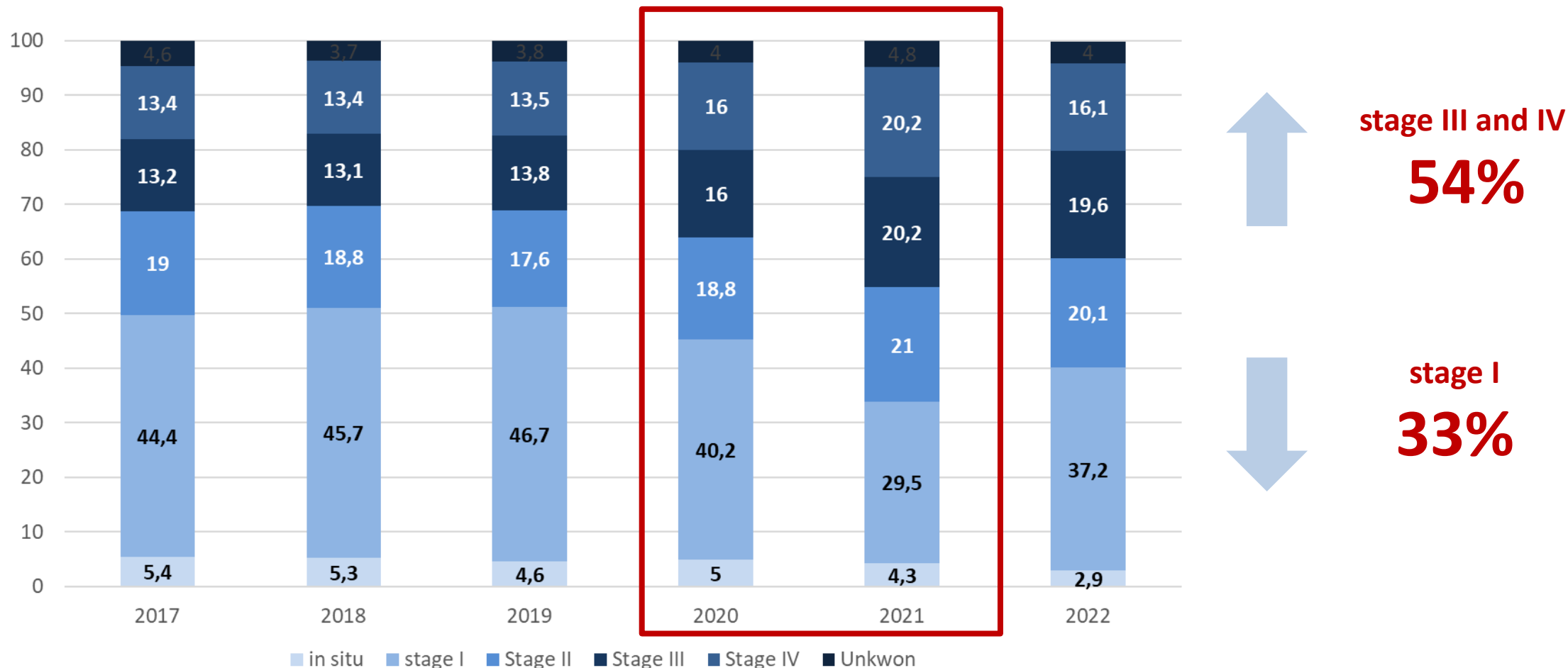


Number of reported and expected cases by year of diagnosis. 2017-2022



Impact of COVID-19 in cancer patients

Proportion of cases reported according to the clinical stage at diagnosis.
Cuba 2017-2022



Current Challenges

- Impact of the **COVID-19** pandemic
- The **increase in the number of cases**, mainly due to the aging of the population.
- Improve the **prevention and early detection** actions to impact mortality reduction.

Prevention

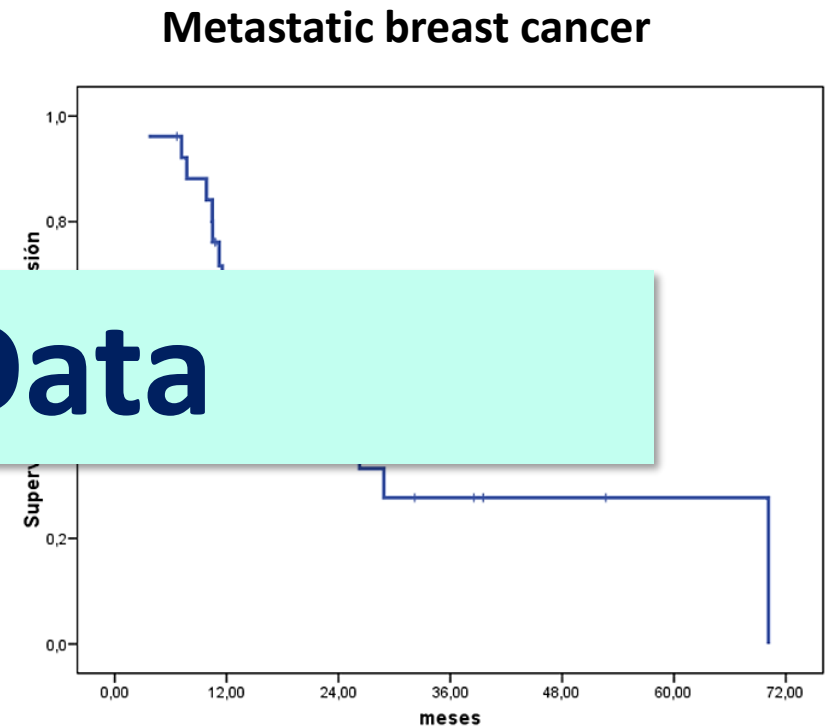
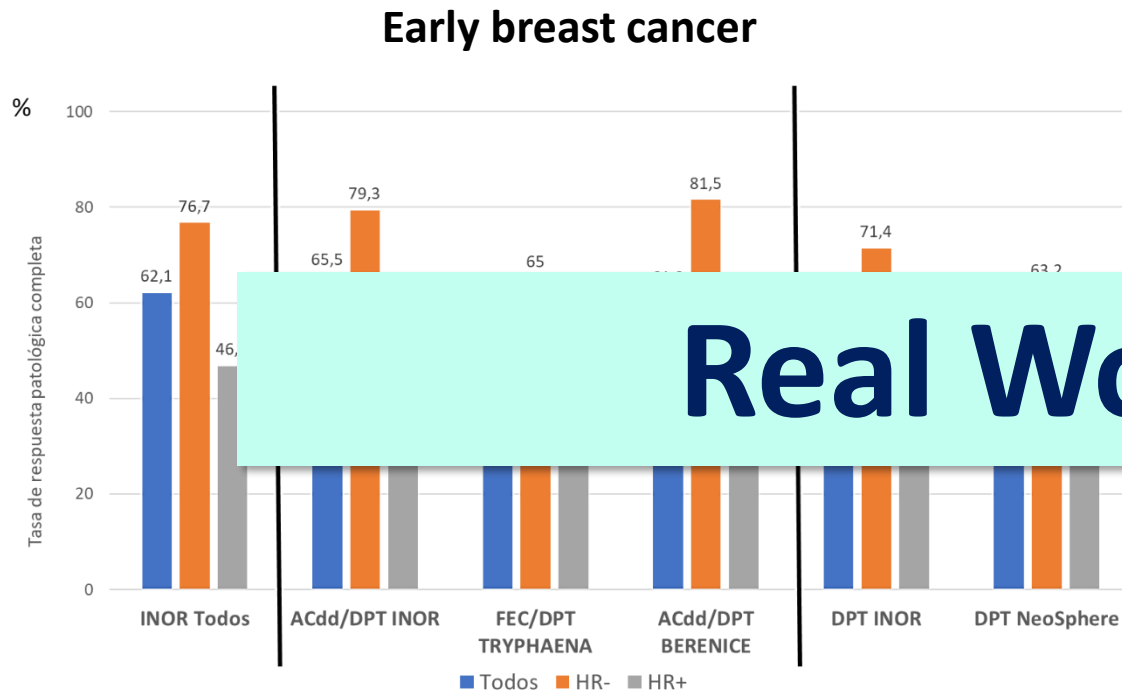
- Tobacco control. More **Effective Tobacco Control** Legislation
- To introduce **HPV vaccination** in girls (will begin this year)

Early detection

- To implement **molecular HPV test** in cervix uterine screening program
- To evaluate **feasibility** of others screening program (colon cancer, lung cancer)
- Development of **biosimilars and generics of targeted therapies** by Cuban pharmaceutical companies.
- Generate **RWE**, and carry out **cost analysis studies** from our context

The greatest impact scenario

Dual anti-Her2 blockade with pertuzumab and trastuzumab in Her2+ breast cancer



Real World Data

4 cycles treatment.

62,1% pCR (pathologic Complete response)

3-years event free survival > 80%

50% of patients **23 cycles or more.**

Median Progression Free Survival 16,3 months

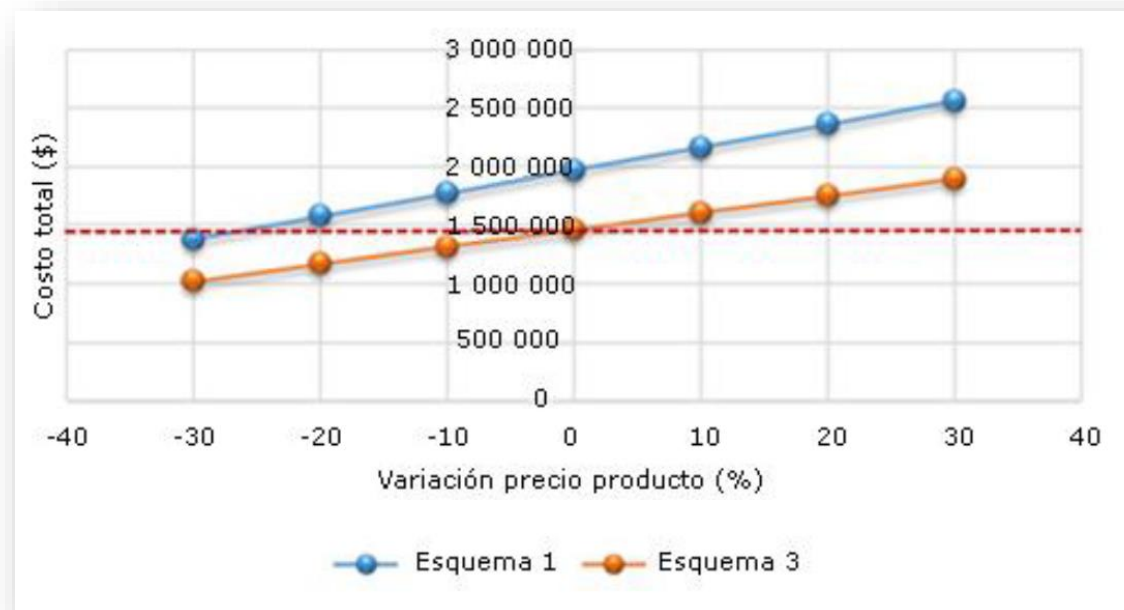
Cost minimization analysis of subcutaneous or intravenous application of trastuzumab and pertuzumab in patients with breast cancer

Total estimated cost of preparations for one year (18 doses) of treatment per patient according to type of regimen and administration routes

Recursos Humanos	Esquema 1	Esquema 2	Esquema 3
Recursos humanos	718,15	608,05	340,76
Consumibles	421,56	359,46	282,42
Fármacos específicos anti-Her2	1 966 400,00	1 587 175,00	1 455 950,00
Exámenes y procedimientos de monitorizaje	1 539,70	1 539,70	1 539,70
Total	1 969 079,41	1 589 682,21	1 458 112,88

Comparación	Diferencia	Porcentaje
Esquema 2 vs Esquema 1	- 379 397,20	19%
Esquema 3 vs Esquema 1	- 510 966,53	26%
Esquema 3 vs Esquema 2	- 131 569,33	6%

Univariate sensitivity analysis



The SC regimen is less expensive than the IV regimen even though drug costs could increase by 30%.

Current Challenges

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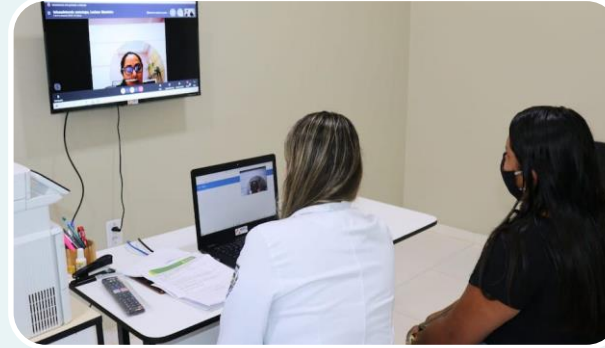
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- Generate **RWE**, and carry out **cost analysis studies** from our context
- Implement the **use of ICT** to support processes

Bridging geographical distances and sharing knowledge through the use of ICTs



**Continuing
Medical
Education**



**Telemedicine
Support
multidisciplinary
team
discussions**



Telepathology

Current Challenges

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- Generate **RWE**, and carry out **cost analysis studies** from our context
- Implement the **use of ICT** to support processes
- Actions addressed to **reorganize the care** of cancer patients in the NON

Challenge



CONFERENCIA MUNDIAL DE LA
OMS SOBRE LAS ENFERMEDADES
NO TRANSMISIBLES (ENT)

DEL 18 AL 20 DE OCTUBRE DE 2017
MONTEVIDEO, URUGUAY

3.4 By 2030, *to reduce one third early mortality from non communicable diseases*

Acknowledgments



**Prof. Dr. Guillermo
Haley**



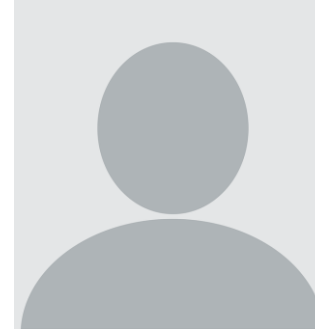
**Prof. Dr. Zoilo
Marinello Vidaurreta**



**Prof. Dr. Julio César
Santa Garay**



**Prof. Dr. Orlando
Valls Pérez**



**Prof. Dr. María Luisa
Busch**



**MSc Yaima Galan Alvarez
Head of the National Cancer Registry**



**Dr. Agustin Lage
Davila**



**Dr. Rolando
Camacho**



**Dr. Teresa Romero
Pérez**



**Dr. María Caridad
Rubio Hernández**

***and to many others who have contributed for so many years to
the cancer control program in Cuba***



**Dr. Carlos Alberto Martínez Blanco
Dr. Gisela Abreu Ruíz
Dr. Walkiria Bermejo Bencomo,**