Panel 5

Therapeutic medical devices

World Health Organization

June,2,2025
15:15 PM CET

Chair : Tazeen Saeed Bukhari

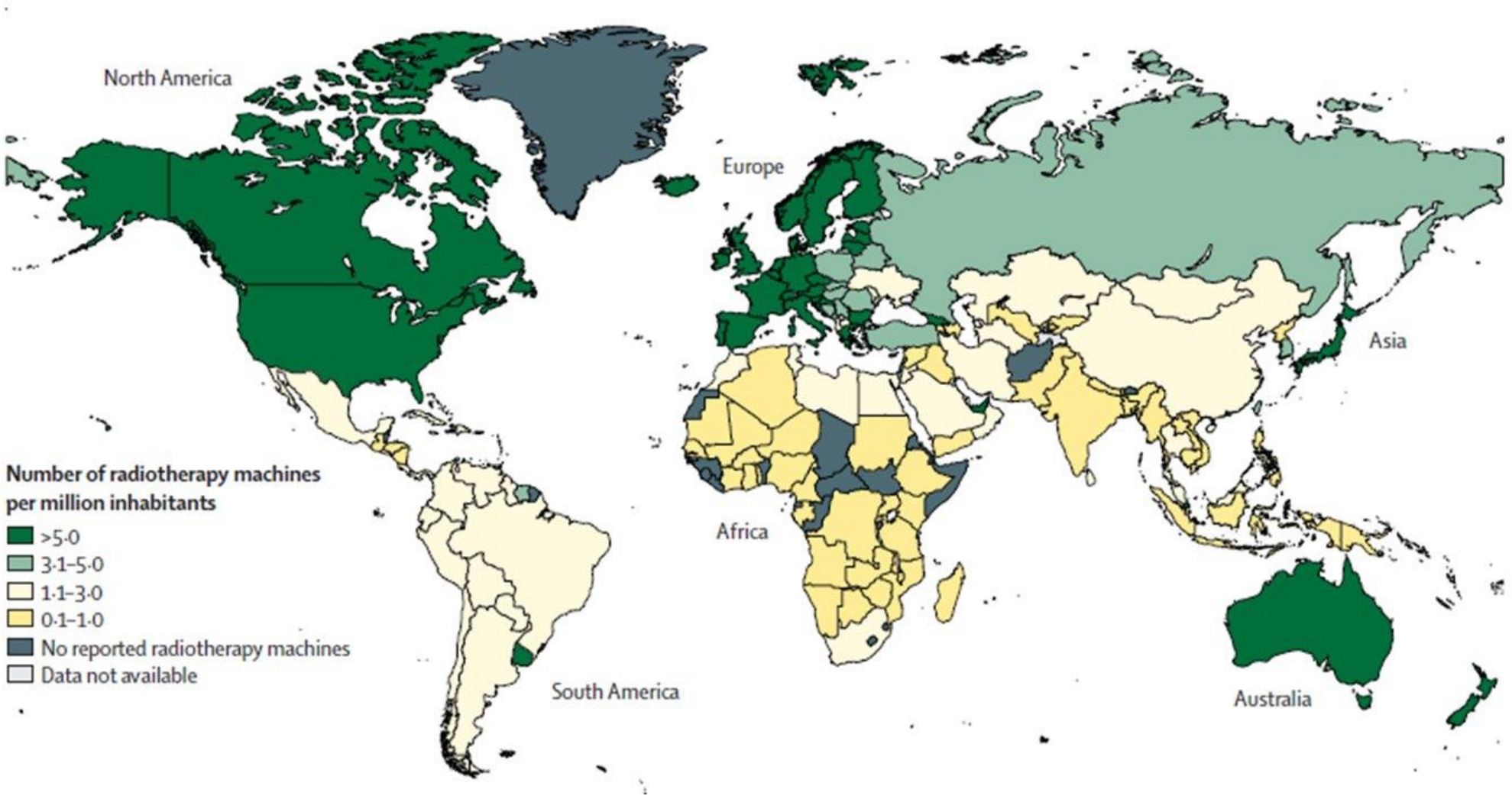
Co- Chair: Laura Alejandra Velez Ruiz Gaitan

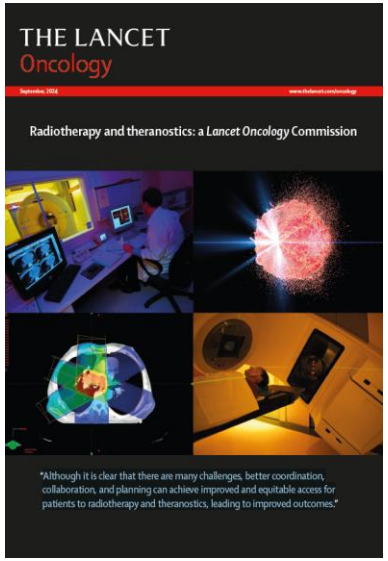
Radiation therapy and IAEA/WHO collaboration in radiotherapy

May Abdel-Wahab

Director, Division of Human Health
Department of Nuclear Sciences and Applications, IAEA

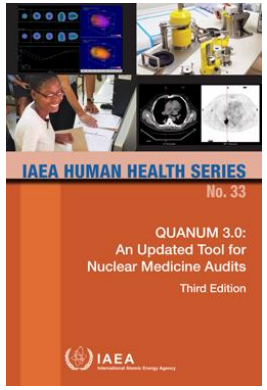
Global availability of RT machines per million inhabitants

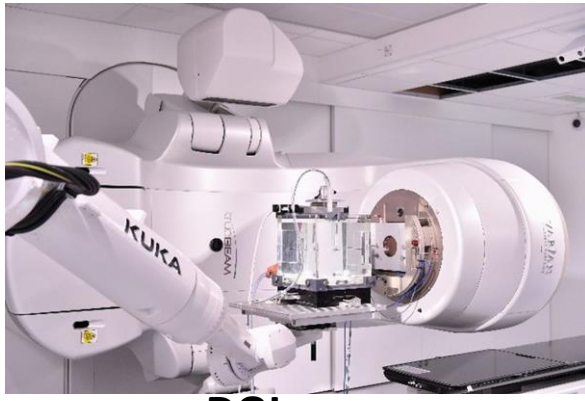




Abdel-Wahab, M. et al. "Lancet Oncology Commission on Radiotherapy and Theranostics." *Lancet Oncology* (2024).

Quality Assurance: Calibrations and Comparisons

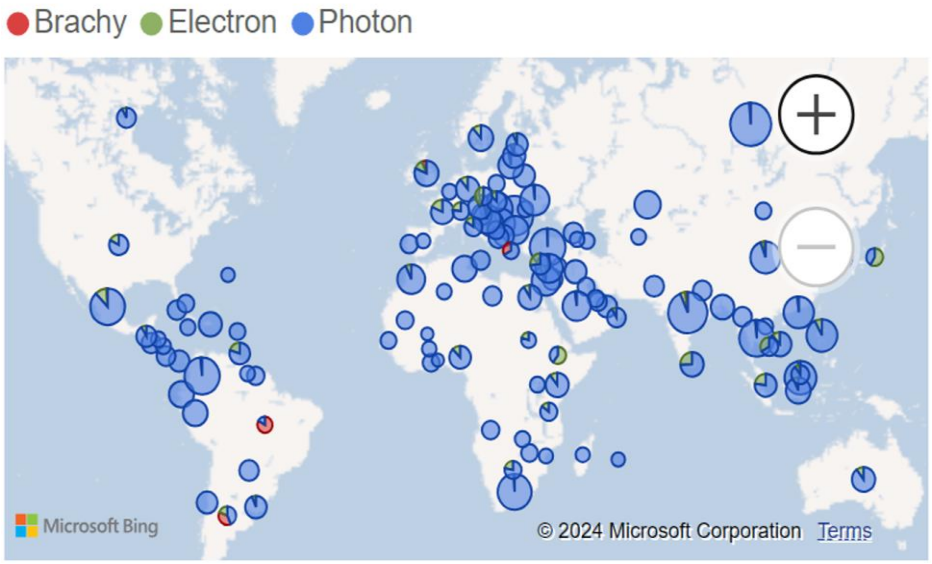




DOL

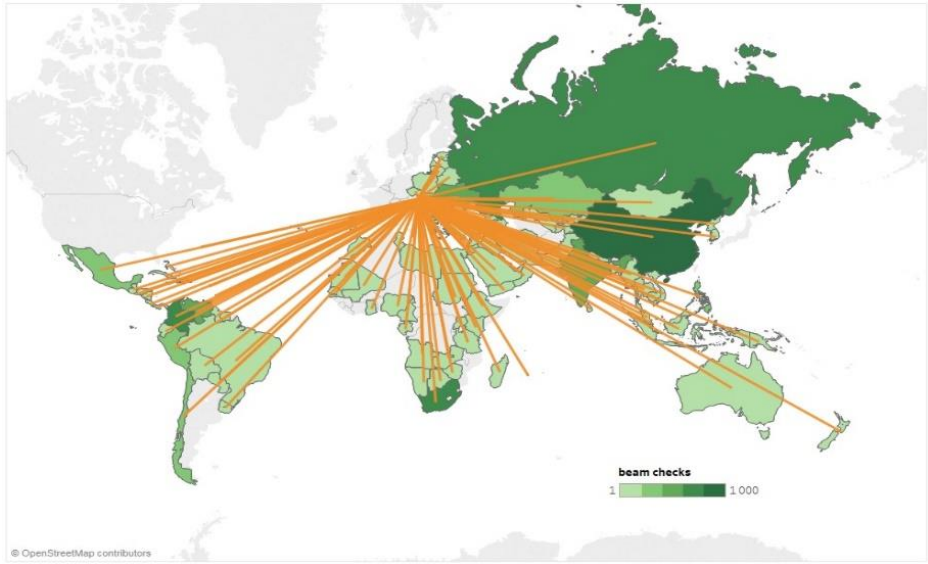
Postal Audits

15,000+ beams checked in 2,700+ radiotherapy centres across 144 countries since 1969



Calibrations

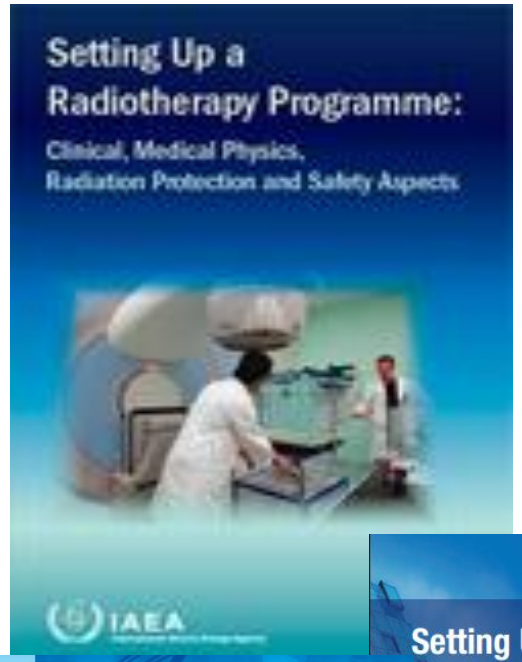
134 ionization chambers calibrated and 269 certificates issued to labs in 39 countries in 2022/23 **WHO-IAEA SSDL network**

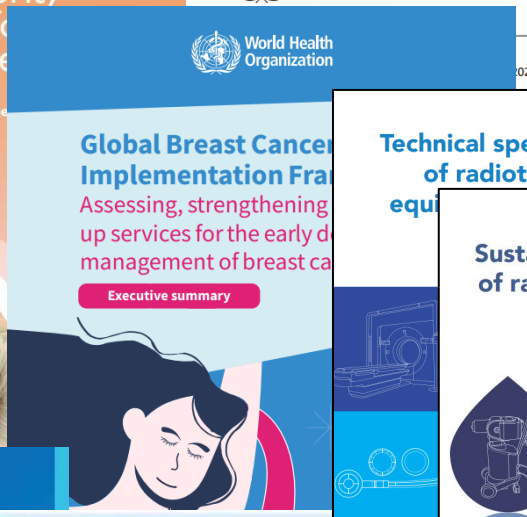


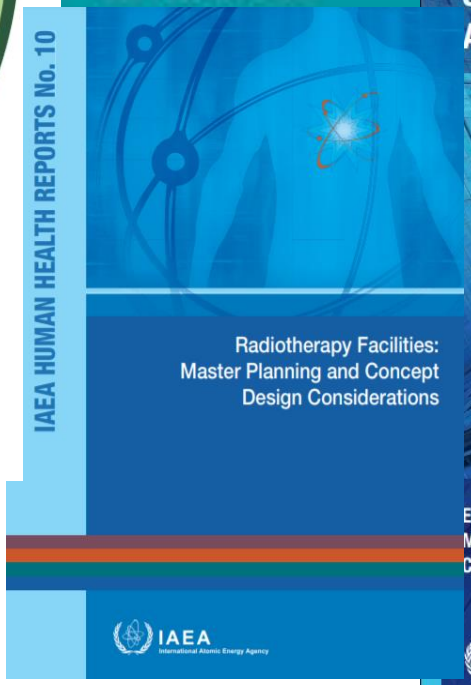
Additional online resources

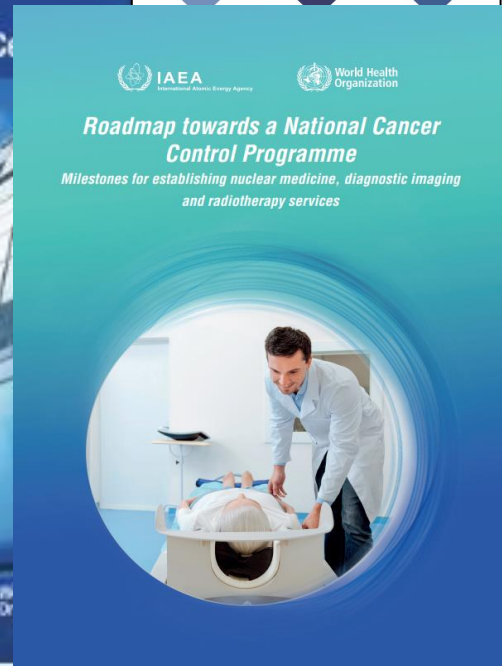
IAEA

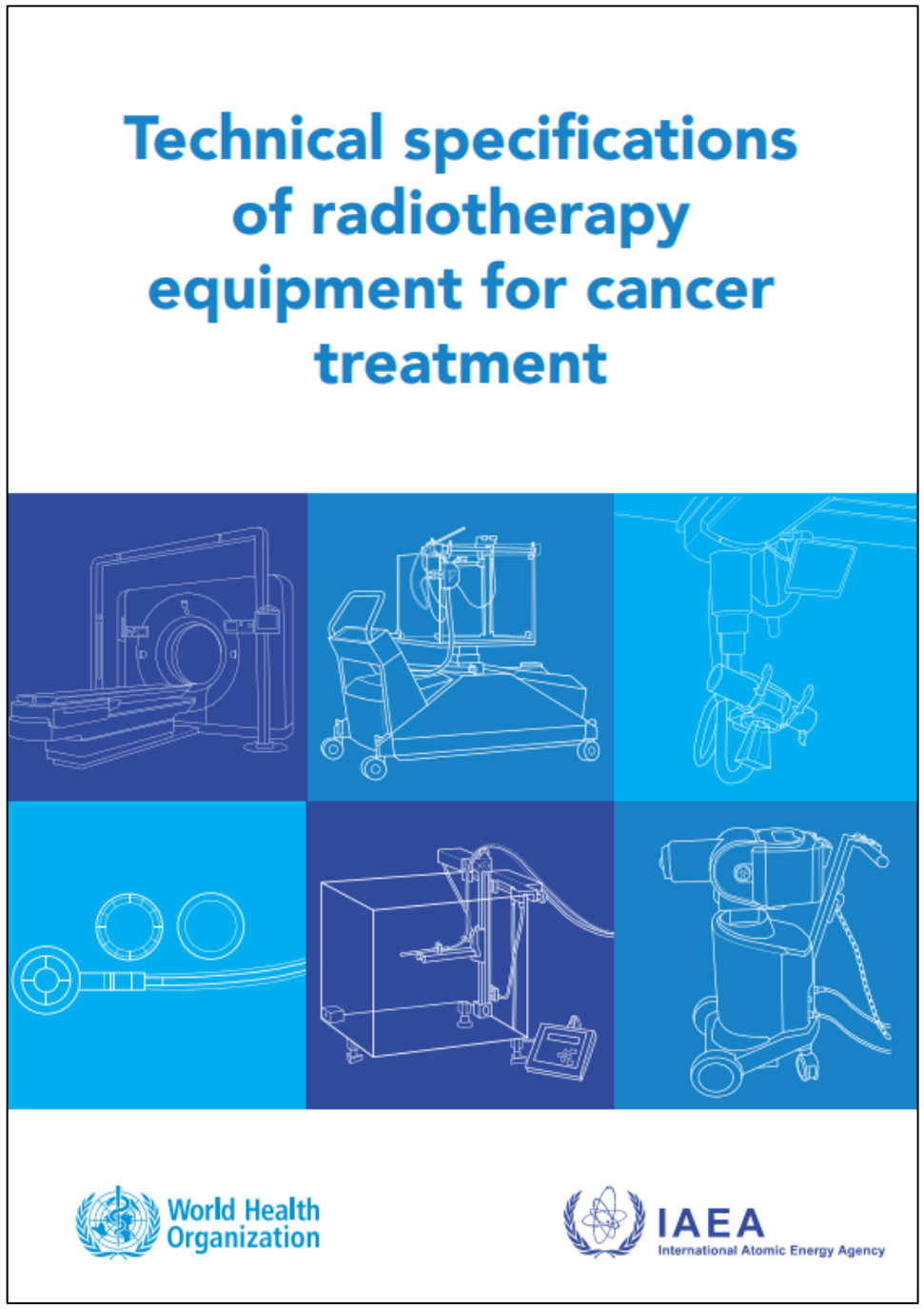
Dosimetry and Medical Radiation Physics Section on www.iaea.org











- Guidance on the specification of technical equipment
- Resource for the planning and provision of radiotherapy equipment

Chapter 2
Overview of radiotherapy equipment

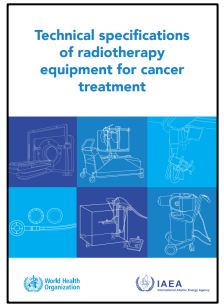
Chapter 3
Technical specifications for external beam radiotherapy (EBRT) equipment

Chapter 4
Technical specifications for brachytherapy equipment

Chapter 5
Establishing a radiotherapy service

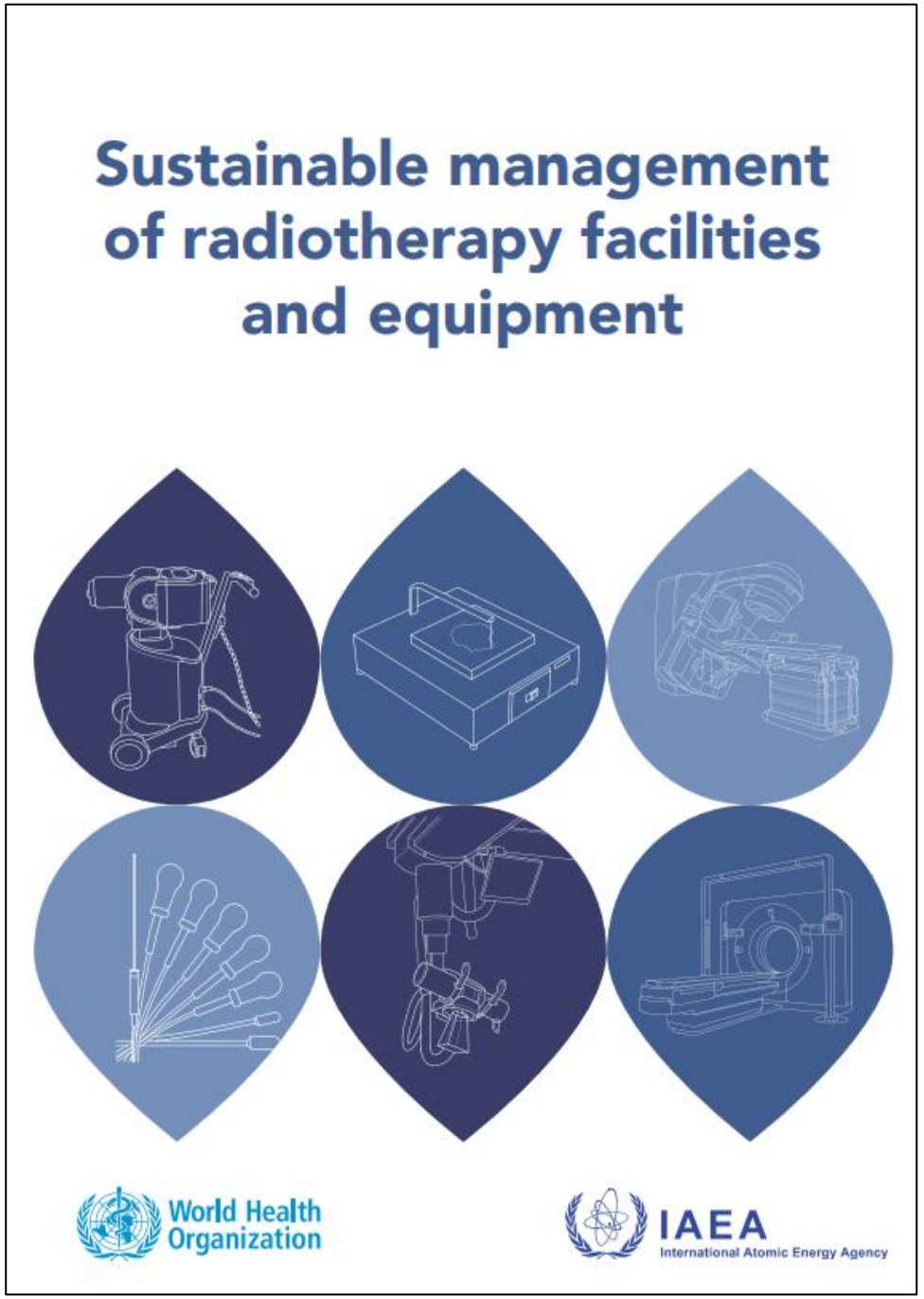
Chapter 6
Emerging technology and techniques in radiotherapy

The publication defines packages of radiotherapy equipment inked to health system capacity to deliver a comprehensive package of cancer interventions appropriate to the resource setting.



	Package 1	Package 2	Package 3
Component	**External beam radiotherapy (EBRT)**		
Treatment unit	Cobalt-60 teletherapy unit (preferably at least one with 100 cm SAD) and/or single-photon energy LINAC; orthovoltage X-ray unit as needed	Package 1 and additional single-photon energy unit(s) and/or multiple energy LINAC with electrons	Additional multiple energy LINACs with electrons and IMRT, VMAT, IGRT, SRS, SBRT capabilities
Treatment unit accessories	Laser system for positioning; standard and customized shielding blocks; oncology information system including record and verify system (OIS including RVS); portal imaging	Laser system for positioning; customized blocks with or without MLC; OIS including RVS; EPID	Laser system for positioning; MLC or mini-MLC or cones; EPID; in-room MV or kV-imaging (for IGRT); motion management system (for IGRT); OIS including RVS
Treatment planning	3D TPS (DICOM- compatible)	3D TPS (DICOM- compatible)	3D TPS with additional capabilities (IMRT, VMAT, IGRT, SRS, SBRT)
Simulation imaging	Conventional digital simulator with laser system; access to a CT scanner	Package 1 and dedicated CT simulator with moveable laser system	CT simulator with moveable laser system and with additional 4DCT capability; access to MRI and/or PET/CT; fiducial markers

	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



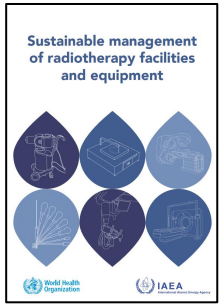
- Guidance on **sustainable management** of the equipment and facilities to ensure that cancer patients are treated safely and accurately, with minimum gaps.

- **Recommendations** on sustaining operation of the equipment and facilities (procurement to replacement at the end of its life-cycle).

Chapter 2
Maintaining a chain of radiotherapy equipment

Chapter 3.
Responsibility for the sustainability of the radiotherapy equipment chain

Chapter 4.
Maintenance for the life-cycle of the radiotherapy equipment chain and facility infrastructure



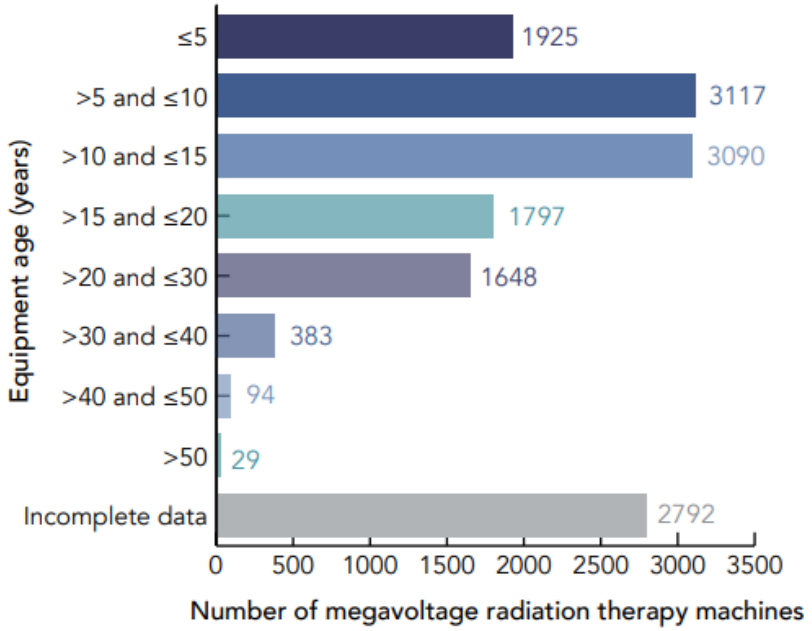
One cause of suboptimal performance of radiotherapy equipment is their operation beyond the recommended life-cycle.

Table 2. Replacement schedule for equipment in the radiotherapy chain and calibration schedule for dosimetry and safety equipment for external beam radiotherapy and brachytherapy[a]

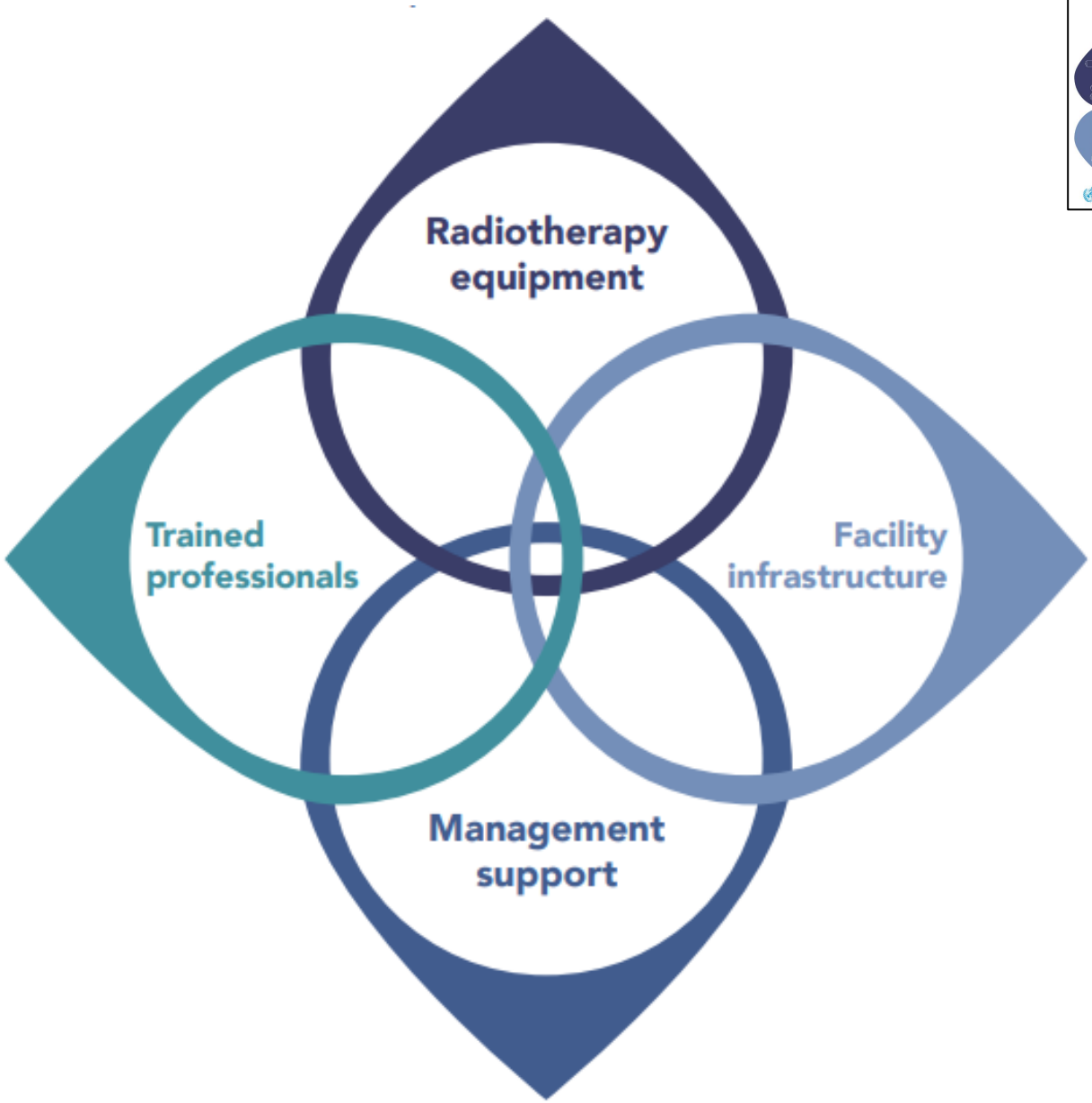
Equipment	Year of use of teletherapy machine														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LINAC											- - - -	- - - -	- - - -	- - - -	- - - -
Cobalt-60 tele-therapy unit						Source re-place-ment					Source re-place-ment				
Superficial or orthovoltage X-ray unit															
CT simulator						- - - -	- - - -	- - - -	- - - -	- - - -					
Conventional simulator															
TPS						Life-cycle can be extended with updates and upgrades of software and hardware									
OIS						Life-cycle can be extended with updates and upgrades of software and hardware									
Patient immobilization devices						- - - -	- - - -	- - - -	- - - -	- - - -					
Mould room equipment															
Dosimetry, quality assurance and radiation safety equipment[b]			Calibra-tion of equip-ment			Calibra-tion of equip-ment			Calibra-tion of equip-ment						
Co-60 Brachytherapy afterloader			Source re-place-ment			Source re-place-ment			Source re-place-ment			Source re-place-ment			

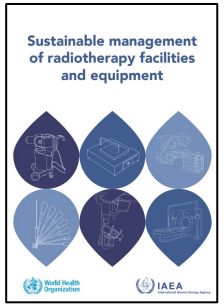
Fig. 2. Age of radiotherapy equipment

A. Age (years) of 14 875 megavoltage radiation therapy machines in 2021



The 4 pillars for a sustainable radiotherapy programme





https://www.iaea.org

Oxygen scaleup initiative

Laura Alejandra Velez Ruiz Gaitan

World Health Organization

Oxygen scaleup initiative

April 2020:
The initiave was borned.

It expanded to regional and country offices to support MS.

Up-to-date status and achievements.

June 2025:
What is next?

- ✓ WHO and other partners have been working towards increasing access to medical oxygen since many years ago.
- ✓ Between 2021 and 2023, WHO hired 25 Biomedical Engineers to support regional and country offices.
- ✓ Since 2021, WHO was part of ACT-A Oxygen Emergency Taskforce which has evolved into the Global Oxygen Alliance (GO_2AL).

2020 - 2021

- Interim guidance: inventory tool, PSA specs.
- Priority list.
- Training videos.
- Procurement of respiratory devices and PSA systems.
- Safety posters.
- Expert technical consultation.

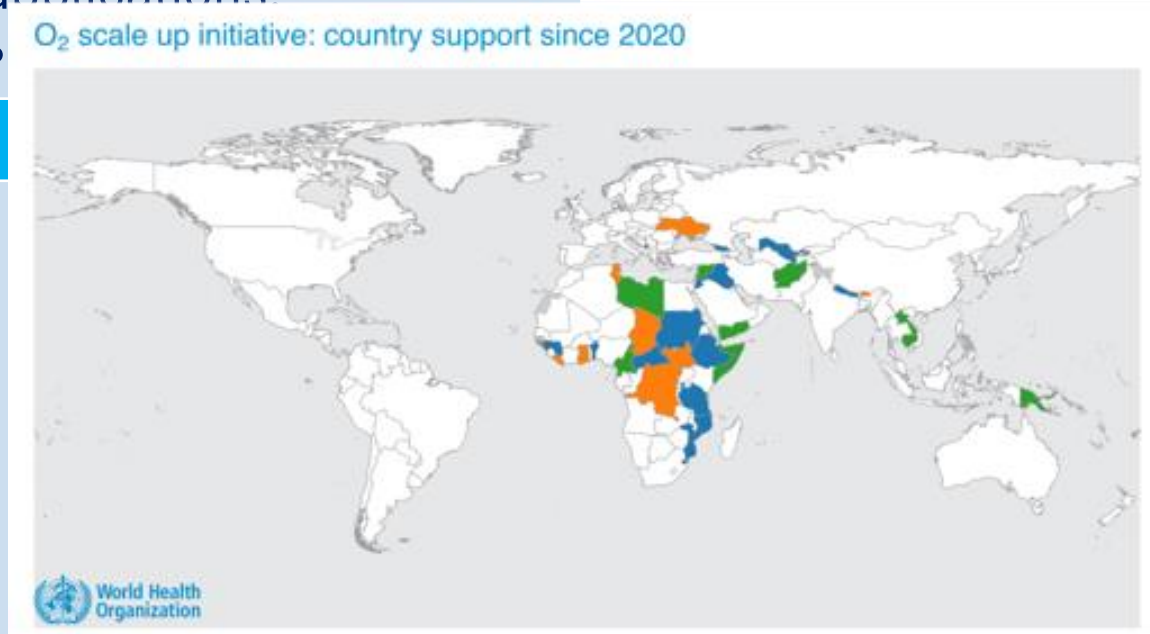
- Field support for implementation of PSA systems.
- Global partner's coordination.

2022 - 2023

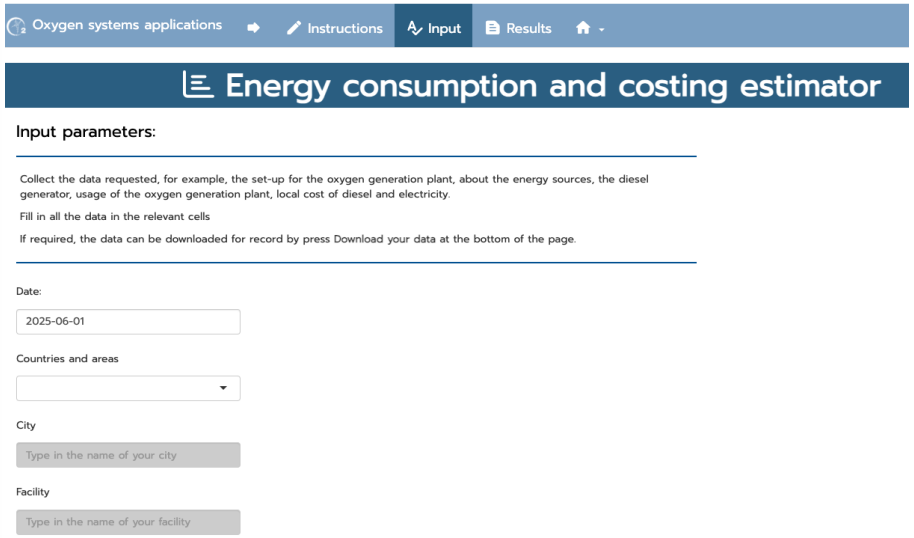
- Foundations and 5 Web-annexes.
- Definition of global KPIs.
- Continuation of field visits and PSA system's procurement.
- 6 Web-based applications.

2024 – 2025 …

- Technical specifications.
- Dakar – global meeting.
- National scaleup plan: development guidance.
- Open WHO: Introduction to oxygen systems.
- 6 National scaleup plan workshops.
- GO2AL: WG3 and WG5.
- Self-inspection checklist.
- Global training package.
- Operational manual



Oxygen scaleup initiative



Crosscutting WHO collaboration:

- ✓ International Pharmacopeia.
- ✓ GMP for medical gases.
- ✓ O_2 Innovative technologies.

Country example: Tunisia – continuous, comprehensive and growing collaboration

1. Procurement and implementation of PSA systems.
2. On-site and virtual training, including to clinical staff and managers.
3. Planned training for pharmacists on QA.
4. Roadmap development (with UNICEF support).
5. More than 4 engineer visits to assess all sites.

Technical products: CHAI implementation of TCO app in Nigeria

The WHO model is an open-access tool to estimate the total cost of ownership of an on-site oxygen generation system. CHAI worked with stakeholders to review the TCO tool and identified country-context parameters that affect utilization and operationalization.

- **Internet-Based Accessibility:** The TCO m
though it may require additional support f
- **Data Availability:** The TCO model relies o
component parts of a PSA plant. However,
typically outsource the installation of PSA
rather than itemized cost breakdowns.
- **Exclusion of Energy Costs:** The model cu
accuracy by incorporating energy costs, su
would offer a more comprehensive view of
- **Salaries for Engineers and Operators:** The
**resource costs, such as salaries for trai
maintenance.** These personnel costs can
- **Distribution Costs:** The model can be furt
hospital or to other facilities, such as expe
significantly impact on the total cost.

Benefits of the WHO TCO tool

Comprehensive Cost Analysis: The tool offers a comprehensive view of both direct and indirect costs of a PSA plant, covering purchase, installation, operation, maintenance, and decommissioning, which aids in accurate budgeting, financial planning, and resource allocation.

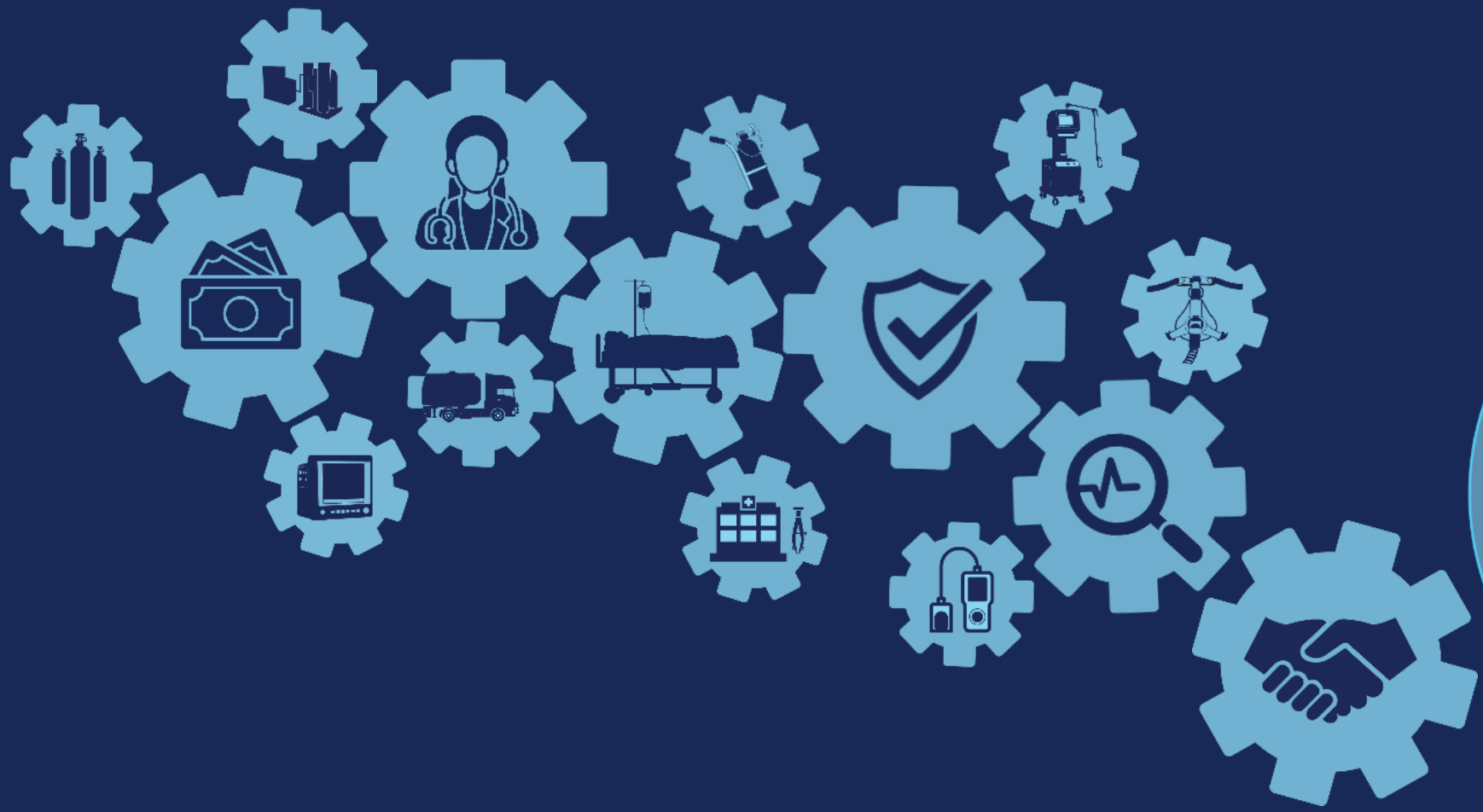
Sustainability and Scalability: The output from the tool can aid in assessing whether the PSA plant can sustainably meet the hospital's oxygen demand as it grows, ensuring continuous, reliable oxygen supply.

affordability for patients while ensuring sustainability for the facility.

Recommendation & implementation

Focus	1 Offline usage	2 Simplify data input requirements	3 Incorporate all costs	4 User training and documentation
Recommendation	▪ Develop an offline-compatible version of the TCO model that allows users to input and save data locally, with the option to sync updates when internet connectivity is available.	▪ Incorporate default or standardized cost estimates for PSA plant components based on regional or global benchmarks to address the lack of granular data. ▪ Enable users to input lump-sum costs with an optional breakdown template for those who have detailed invoices. This flexibility ensures broader usability. ▪ Add an "approximation mode" that uses pre-set assumptions for missing data, making the tool practical even with limited information.	▪ Integrate all Opex-related costs, including energy, human resources, distribution, and other expenses, into a single model to simplify usage for end users.	▪ Provide a more comprehensive user guide or training materials to help users understand how to input data, use assumptions, and interpret outputs when detailed data is unavailable.
Implementation	▪ To enable offline usage, we created an Excel version of the model. ▪ To maintain the integrity of the outputs, all calculation cells have been locked, allowing users to input data only in designated input cells.	Included three options for CAPEX cost entry: ▪ Detailed input entries. ▪ Lump sum entries based on supplier invoices. ▪ Integration with the WHO tool, allowing entries through CAPEX outputs from the WHO tool.	▪ To enhance usability, the adapted model consolidates all cost centers into a single framework, minimizing the margin of error and simplifying its application.	▪ We enhanced the model by adding an instruction tab that offers clear guidance on data input categories, sources, references for assumptions, and provides general descriptions and notes for users

World Health Organization



2

THE LANCET Global Health

COMMISSION ON MEDICAL OXYGEN SECURITY

Reducing global inequities in medical oxygen access:

The Lancet Global Health Commission on Medical Oxygen Security

5TH WHO GLOBAL FORUM ON MEDICAL DEVICES

Global medical oxygen need

Who needs oxygen?

374 million people

306 million (82%) live in LMICs

- 30% (93 million) in South Asia
- 29% (88 million) in East Asia & Pacific
- 24% (72 million) in Sub-Saharan Africa
- 8% (24 million) in Latin America & Caribbean
- 5% (17 million) in Middle East & North Africa
- 4% (12 million) in Europe & Central Asia

4.6 billion cubic meters (Nm3)

- 1·2 billion Nm3 for acute medical and surgical (see Figure 1)
- 3.2 billion Nm3 for COPD (not on Figure 1)

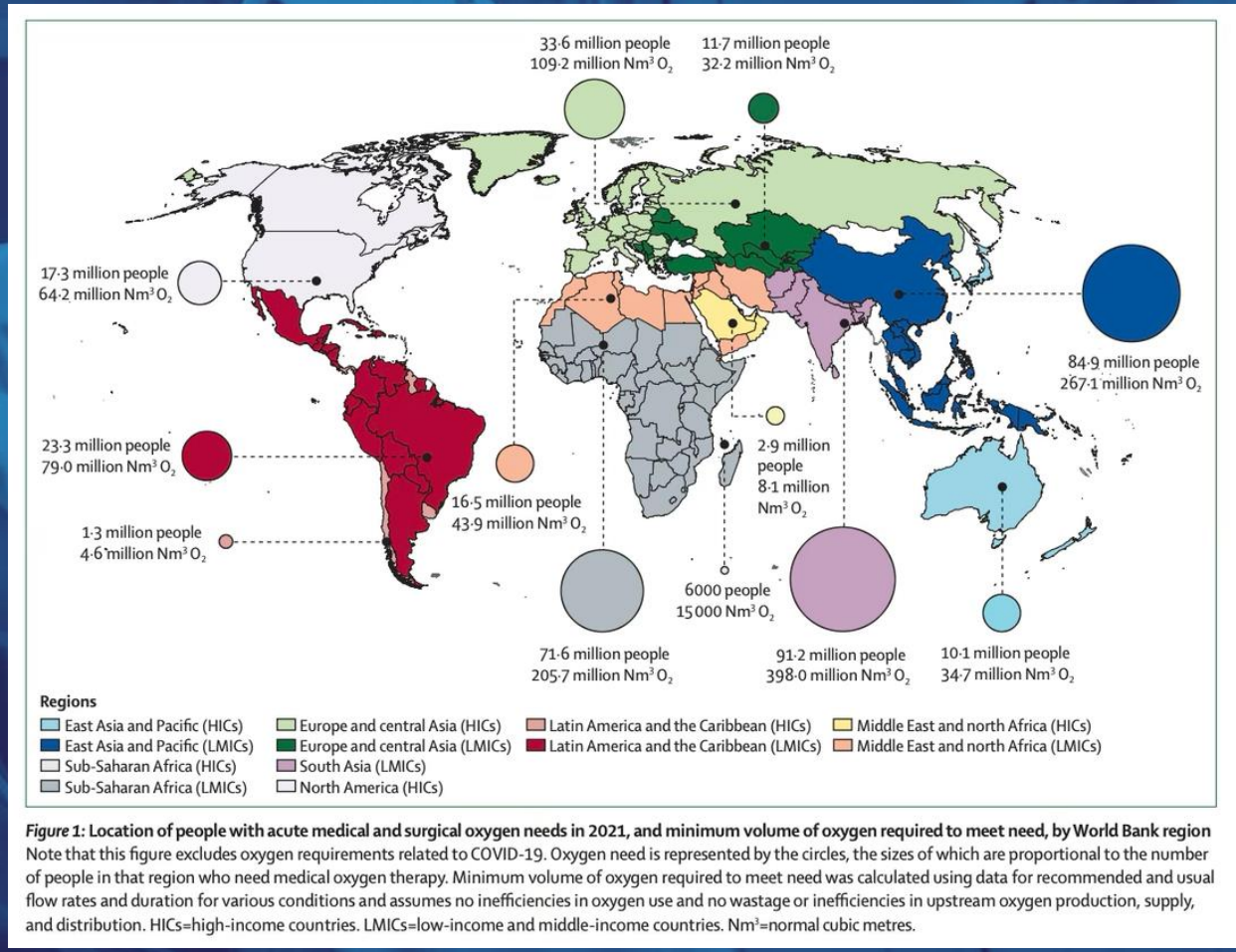


Figure 1: **Location of people with acute medical and surgical oxygen needs in 2021, and minimum volume of oxygen required to meet need, by World Bank region**
Note that this figure excludes oxygen requirements related to COVID-19. Oxygen need is represented by the circles, the sizes of which are proportional to the number of people in that region who need medical oxygen therapy. Minimum volume of oxygen required to meet need was calculated using data for recommended and usual flow rates and duration for various conditions and assumes no inefficiencies in oxygen use and no wastage or inefficiencies in upstream oxygen production, supply, and distribution. HICs=high-income countries. LMICs=low-income and middle-income countries. Nm³=normal cubic metres.

THE *LANCET GLOBAL HEALTH* COMMISSION

MEDICAL OXYGEN SECURITY

Oxygen coverage gaps

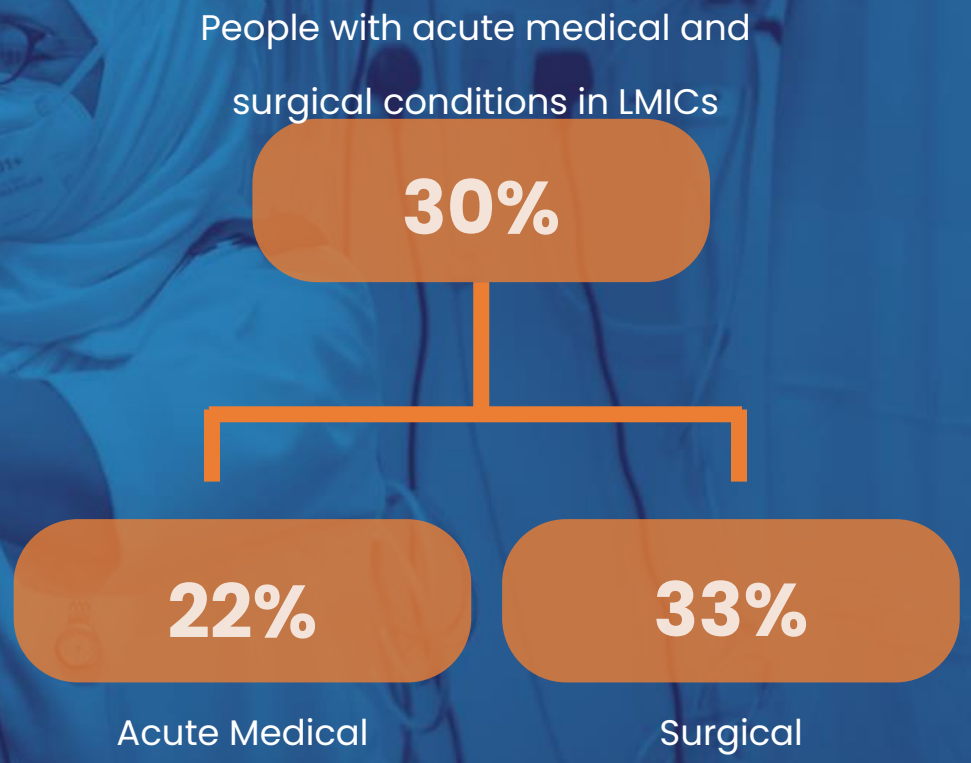
Who receives oxygen in LMICs?

In LMICs, less than 1 in 3 people who need oxygen receive it

- 30% coverage for people with acute medical and surgical conditions (89 of 299 million)
  - 22% coverage for people with acute medical conditions (20 of 87 million)
  - 33% coverage for people with surgical conditions (70 of 212 million)
- Long-term oxygen therapy not included

In contrast, more than 3 in 4 people with HIV/AIDS or TB in LMICs get treated

- 75% coverage of TB medicines (1)
- 77% coverage of AIDS medicines (2)



1) Global tuberculosis report 2024, WHO 2024
2) AIDS at a crossroads: 2024 global AIDS update, UNAIDS 2024.

THE *LANCET GLOBAL HEALTH* COMMISSION

MEDICAL OXYGEN SECURITY

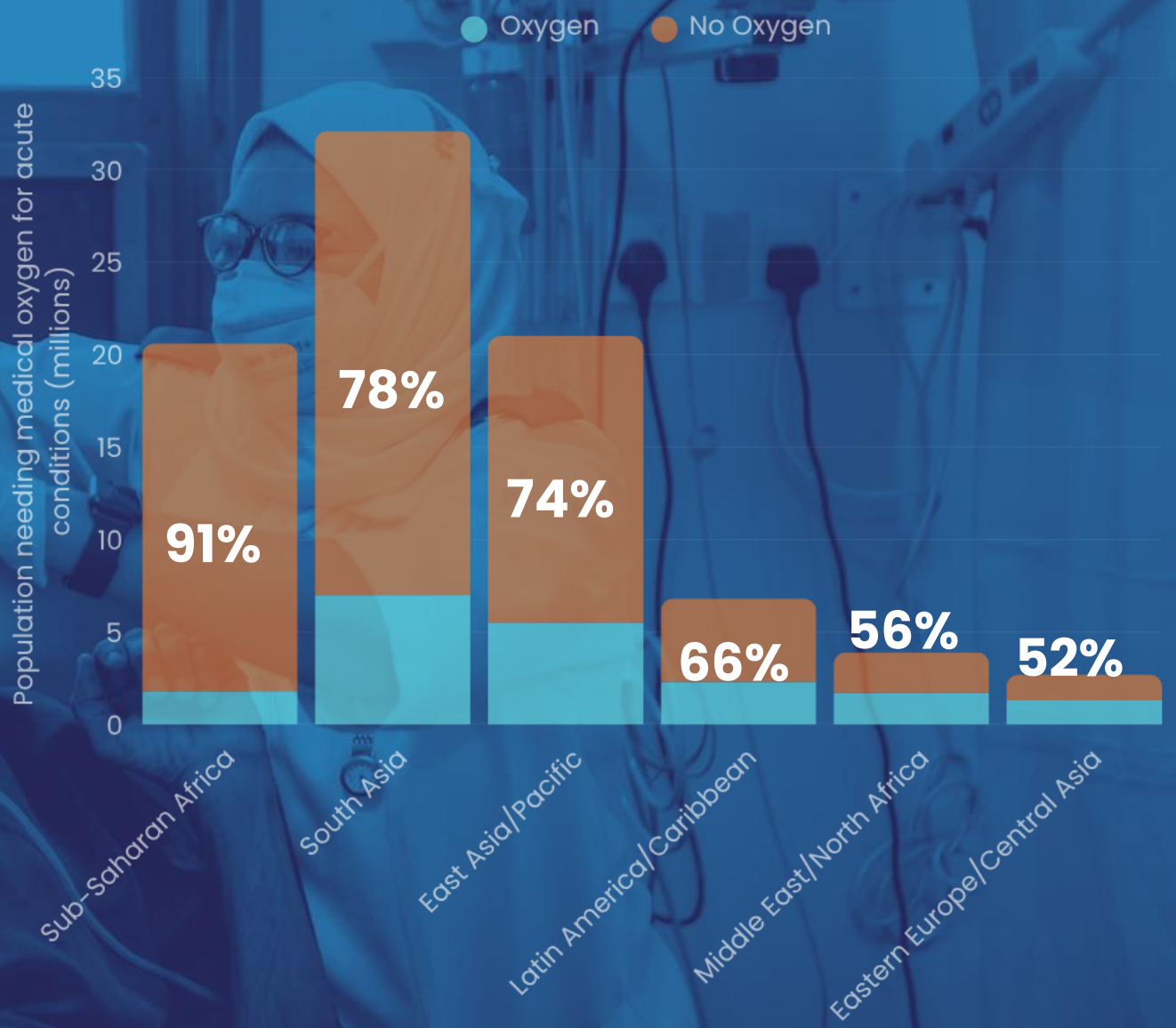
Oxygen coverage gaps

Regional differences in medical oxygen coverage

Deep regional inequities in oxygen coverage for patients with acute medical conditions

- 9% of patients in Sub-Saharan Africa get oxygen (1.8 of 20.6 million), 91% no oxygen
- 22% of patients in South Asia (7 of 32.1 million), 78% no oxygen
- 26% of patients in East Asia and Pacific (5.5 of 21 million), 74% no oxygen
- 34% of patients in Latin American and Caribbean (2.3 of 6.8 million), 66% no oxygen
- 44% of patients in the Middle East and North Africa (1.7 of 3.9 million), 56% no oxygen
- 47% of patients in Eastern Europe & Central Asia (1.3 of 2.7 million), 52% no oxygen

No regional breakdown for surgical or chronic oxygen needs due to lack of data



THE *LANCET GLOBAL HEALTH* COMMISSION

MEDICAL OXYGEN SECURITY

Costing the oxygen coverage gap

How much will it cost?

US$6.8 billion a year is needed to close the coverage gap and US$34 billion from 2025–2030 (see Figure 6)

- South Asia: US$2·6 billion
- East Asia & Pacific: US$1·8 billion
- Sub-Saharan Africa: US$1·7 billion
- Latin America & Caribbean: US$436 million
- Middle East & North Africa: US$212 million
- Europe & Central Asia: US$148 million

A COVID patient used about four cylinders per day so we ran out quickly and asked the health ministry to send more, but they didn't have enough money.

Doctor, Sierra Leone

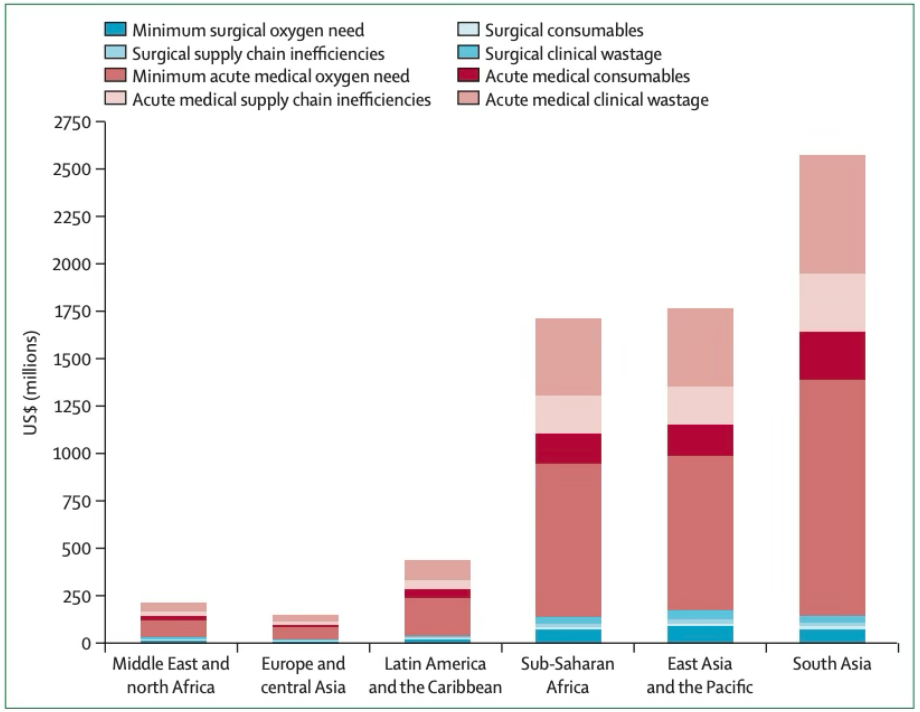


Figure 4: **Annual cost to close the acute medical and surgical oxygen gaps in low-income and middle-income countries**

The minimum cost of the medical and surgical oxygen need is the cost to fill the oxygen coverage gap, based on recommended treatment. We inflated this cost to reflect actual practice and included inefficiencies in the system, clinical wastage, and additional consumables in our estimates (appendix 1 p 78). Supply chain inefficiencies refer to leakages in oxygen delivery systems and losses during production, distribution, and storage. Clinical wastage is the use of higher flow rates for longer periods than recommended, and treatment of patients without a clinical need for oxygen. Consumables includes the cost of pulse oximetry, nasal cannulas, masks, and staff time.

92% of cost gap is acute medical

THE *LANCET GLOBAL HEALTH* COMMISSION

MEDICAL OXYGEN SECURITY

Oxygen solutions: pulse oximetry at all levels of care

SpO2 is a vital sign

Pulse oximetry is the gateway to safe and appropriate use of medical oxygen

- Hypoxaemia is an important danger sign
- Low SpO2 should prompt re-assessment, referral or follow-up

Implementation of pulse oximetry in primary care settings is feasible

- Introduction needs to consider wider service provision capacities
- Implementation needs to be supported by a functional referral system

Photo: Unitaid

THE *LANCET GLOBAL HEALTH* COMMISSION

MEDICAL OXYGEN SECURITY

Oxygen solutions: building resilient oxygen systems

Oxygen systems are not a one-size-fits all solution

- Systems need to fit the context - including essential infrastructure and biomedical support
- Mixed sources of oxygen should be embraced
- Back-up oxygen sources are essential
- Affordable, uninterrupted and clean power
- Local energy environment needs to be planned for
- Equip devices with surge and voltage fluctuation protection
- Solar solutions should consider the needs of the whole facility
- New technologies should prioritize energy efficiency

Photo: The Global Fund

> *When the power went off, patients on the concentrators had to wait for the generator to kick in. Sometimes it took five minutes, and we had patients who died in that gap of time.*

Doctor, Sierra Leone

THE *LANCET GLOBAL HEALTH* COMMISSION

MEDICAL OXYGEN SECURITY

Optimización de la Protección en Radiología Intervencionista Pediátrica en América Latina y el Caribe

(OPRIPALC)

A response to a need: to provide guidance and promote the use of **DRLs in interventional procedures** in Latin American and Caribbean countries

Pan American Health Organization

In cooperation with

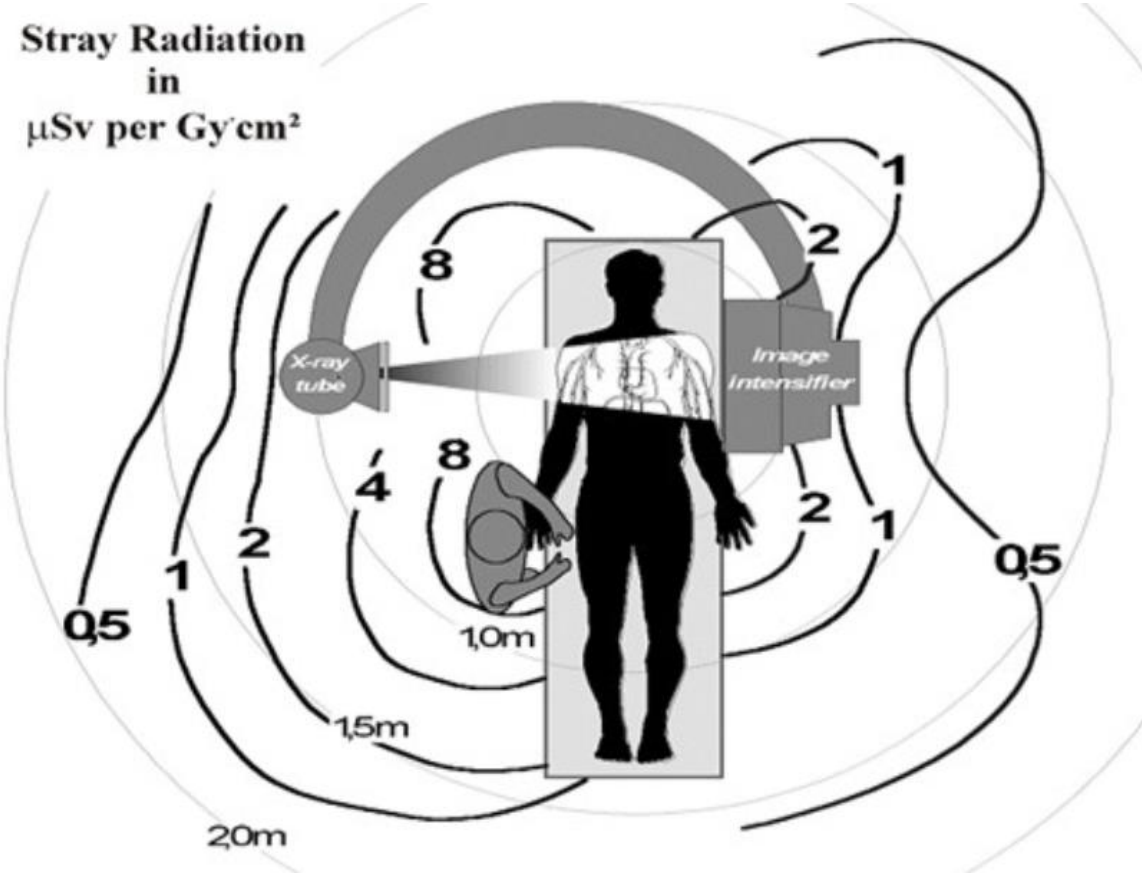
World Health Organization

IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Background

Interventional Radiology, also referred to as image-guided procedures or image-guided surgery uses imaging technology (such as X-ray, CT) to diagnose and treat patients. It is much less invasive than conventional treatments, however, the radiation doses could be high. Examples are:

- Angioplasty- repair or unblocking of blood vessels.
- Stenting- small mesh tubes that treat narrow or weak arteries.
- Thrombolysis- dissolving blood clots.
- Embolization- block blood flow to cancer cells.
- Radiofrequency ablation- used to reduce nerve pain.
- Biopsies- study of tissues.



International Commission on Radiological Protection

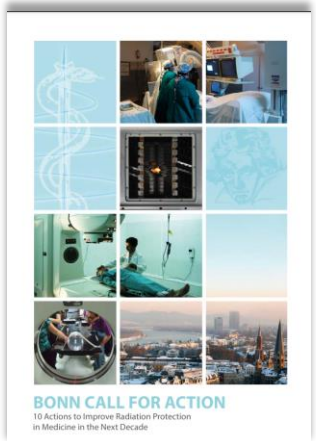
World Health Organization

- International Basic Safety Standards (2011/2014)

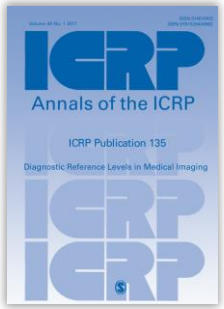
*"A requirement to establish **Diagnostic reference levels** (DLRs) at national/regional level"*

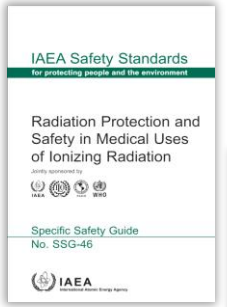
- IAEA/WHO's Bonn Call for Action (2012)

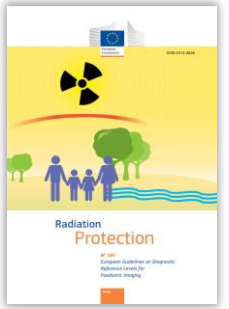
"*Ensure establishment, use of, and regular update of **DRLs** for radiological procedures, including **interventional procedures, in particular for children***"



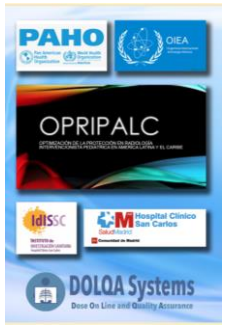
- Guidance on **DRLs** by international bodies:
  - ICRP Publication135 on DRLs in medical imaging (2017);
  - IAEA, ILO, PAHO, WHO Safety Guide SSG-46 (2018);
  - EC guidelines on DRLs for paediatric imaging (2018);
  - ORPIPALC Project launched by WHO and PAHO (2018—2019).







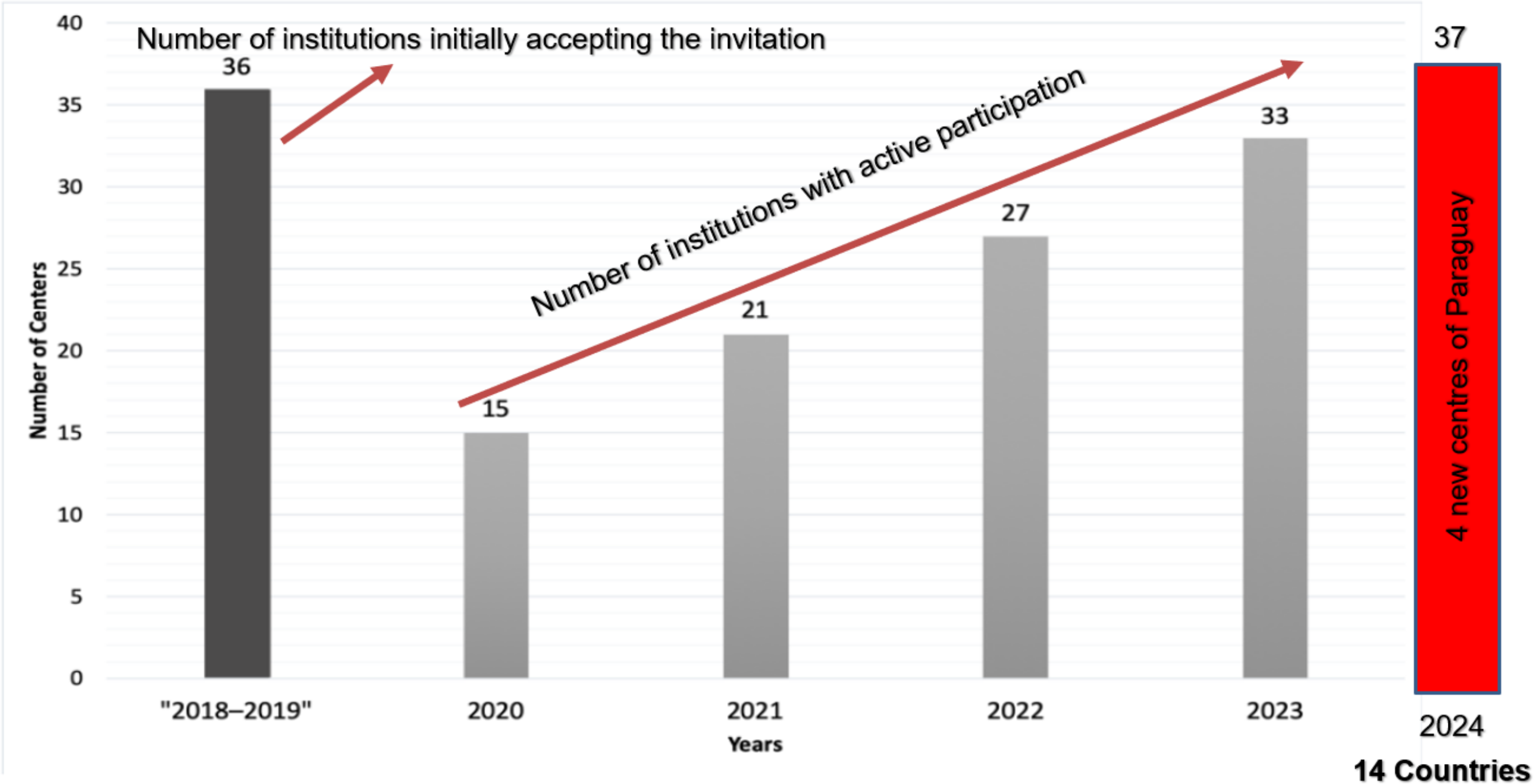
*Because of lack of data about the establishment and use of regional **DRLs** for pediatric interventional procedures*



World Health Organization

ORPIPALC – Activities

- Assessment of availability and use of **X-ray equipment** for interventional radiology and **operating protocols**;
- Establishment of a basic programme for **quality control** of the X-ray equipment;
- Identification of the most frequent **clinical procedures** performed in the different countries (diagnostic and therapeutic);
- Harmonization of the **nomenclature** of procedures and classification by **levels of complexity**;
- Collection of patient dose data to determine **regional DRLs**;
- Development of updated **training material**.



World Health Organization

Evolution of the number of centers per year.

ORPIPALC -Outcomes

IAEA

Regional Workshop on Optimization of Protection in Pediatric Interventional Radiology in Latin American and Caribbean countries (OPRIPALC).

Hosted by

The Government of Costa Rica

through the

Ministerio de Salud - Costa Rica

San Jose, Costa Rica

16 to 19 October 2023

Ref. No.: ME-RLA9091-2302276

Information Sheet

Purpose

The purpose of the event is to gather the experiences of the centers that have participated in the OPRIPALC project. The objective is to assess the progress made in implementing quality control tests in the centers and to discuss the nomenclature and categorization of procedures. Following the event, a small team will review the outcomes of the discussions to finalize the draft document on consensus for good practices titled "Optimization of Protection and Safety in Pediatric Interventional Radiology and Interventional Cardiology Procedures (OPRIPALC)".

World Health Organization

Acknowledgement

Special thanks to the members of the OPRIPALC coordinating group:

Maria Perez and Emilie van Deventer (WHO), Pablo Jimenez (PAHO), Eliseo Vaño (Spain), Patricia Miranda (Chile), Alejandro Nader and Raúl Ramírez (IAEA) and Carlos Ubeda (WHO consultant).

For further information:

Dr Ferid Shannoun, Scientist

Radiation and Health Unit, WHO

shannounf@who.int

World Health Organization

Surgery Packs for UHC Compendium

Global Forum for medical devices

Anita Gadgil
WHOCC Emergency, Critical and Operative care
The George Institute of Global Health
India

Why Surgery Packages are needed in UHC compendium ?

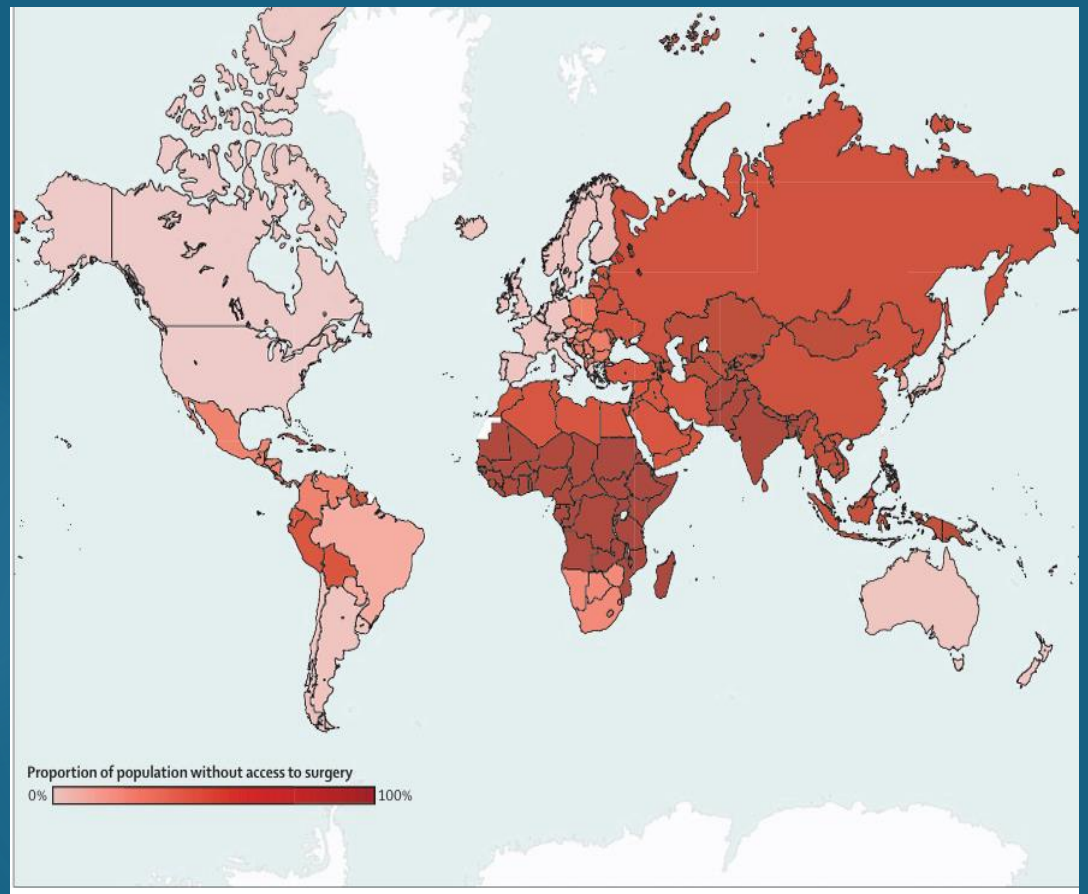


Figure 2: Proportion of the population without access to safe, affordable surgery and anaesthesia by Institute for Health Metrics and Evaluation region (selective tree)[25,29]

Surgically treatable conditions contribute 11-30% of global burden of diseases

5 billion people do not have access to safe surgery.
143 million additional surgical procedures are needed.

The provision of various surgical procedures under universal health compendium by member states can increase equitable access to surgery globally.

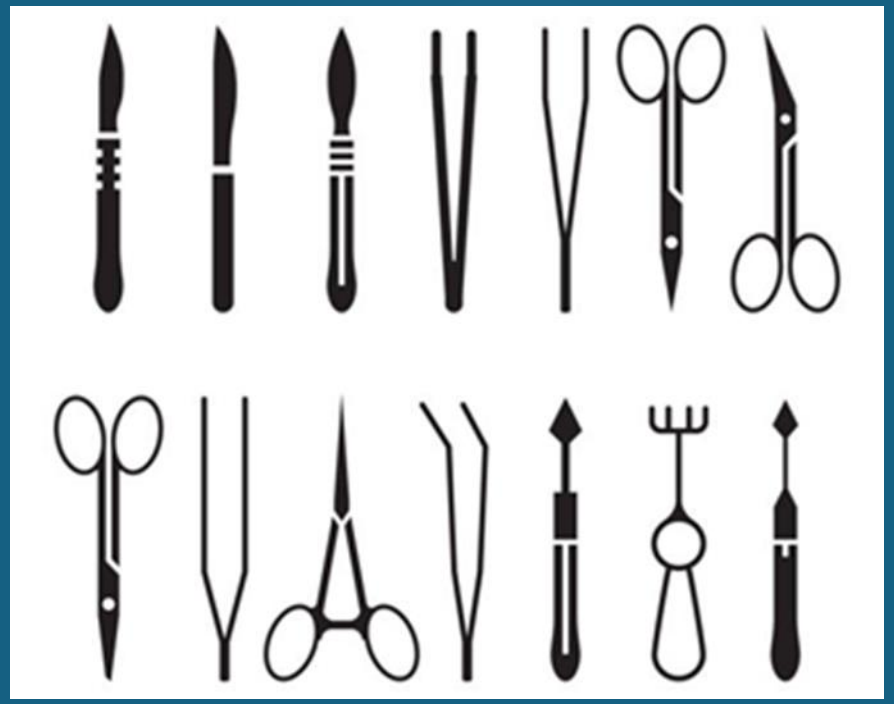
UHC Surgical packs allow member states to select procedures and surgeries which they can provide under UHC depending on the resources available.

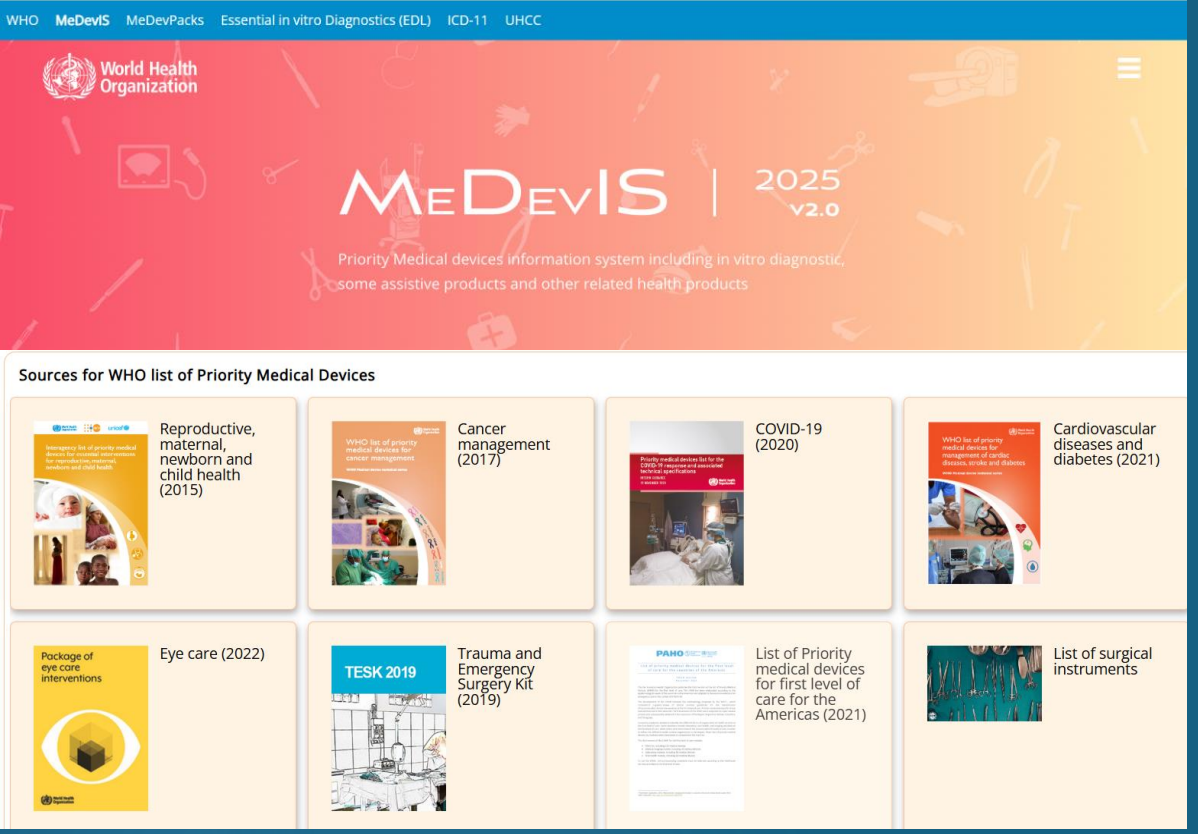
So we provide flowers and member states make their own bouquets

Surgeries for trauma care

Cancer care

Essential and emergency surgeries

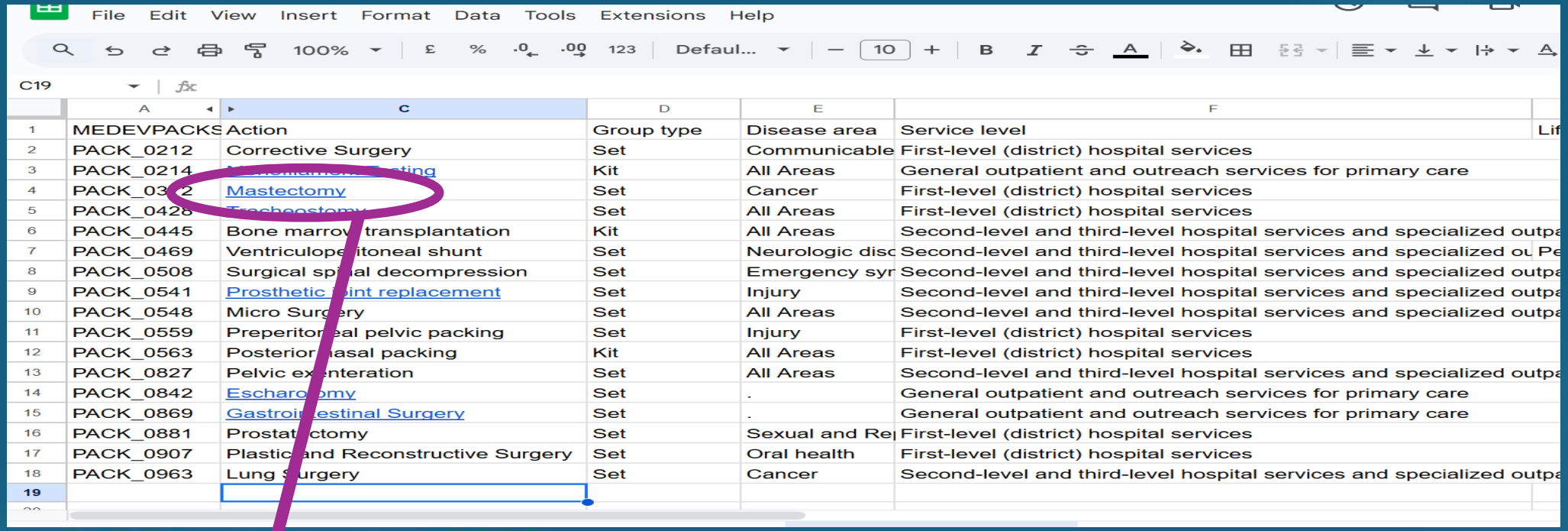




- Creating new sets by compiling instruments from large list of surgical instruments available under various sets
- Verification and editing of existing sets by a panel of subject experts like gynecologists, orthopedic surgeons and so on

Buddy pairing of med students/ research fellows with experienced surgeon subject experts from various medical colleges and tertiary and high academic institutes.

Collaboration with other WHOCCs



File Edit View Insert Format Data Tools Extensions Help

C19

	A	C	D	E	F
1	MEDEVPACKS	Action	Group type	Disease area	Service level
2	PACK_0212	Corrective Surgery	Set	Communicable	First-level (district) hospital services
3	PACK_0214	[illegible]ting	Kit	All Areas	General outpatient and outreach services for primary care
4	PACK_03[illegible]2	Mastectomy	Set	Cancer	First-level (district) hospital services
5	PACK_0428	Tracheostomy	Set	All Areas	First-level (district) hospital services
6	PACK_0445	Bone marrow transplantation	Kit	All Areas	Second-level and third-level hospital services and specialized outpa
7	PACK_0469	Ventriculoperitoneal shunt	Set	Neurologic disc	Second-level and third-level hospital services and specialized ou Pe
8	PACK_0508	Surgical spinal decompression	Set	Emergency syr	Second-level and third-level hospital services and specialized outpa
9	PACK_0541	Prosthetic joint replacement	Set	Injury	Second-level and third-level hospital services and specialized outpa
10	PACK_0548	Micro Surgery	Set	All Areas	Second-level and third-level hospital services and specialized outpa
11	PACK_0559	Preperitoneal pelvic packing	Set	Injury	First-level (district) hospital services
12	PACK_0563	Posterior nasal packing	Kit	All Areas	First-level (district) hospital services
13	PACK_0827	Pelvic exenteration	Set	All Areas	Second-level and third-level hospital services and specialized outpa
14	PACK_0842	Escharotomy	Set	.	General outpatient and outreach services for primary care
15	PACK_0869	Gastrointestinal Surgery	Set	.	General outpatient and outreach services for primary care
16	PACK_0881	Prostatectomy	Set	Sexual and Rep	First-level (district) hospital services
17	PACK_0907	Plastic and Reconstructive Surgery	Set	Oral health	First-level (district) hospital services
18	PACK_0963	Lung Surgery	Set	Cancer	Second-level and third-level hospital services and specialized outpa
19					

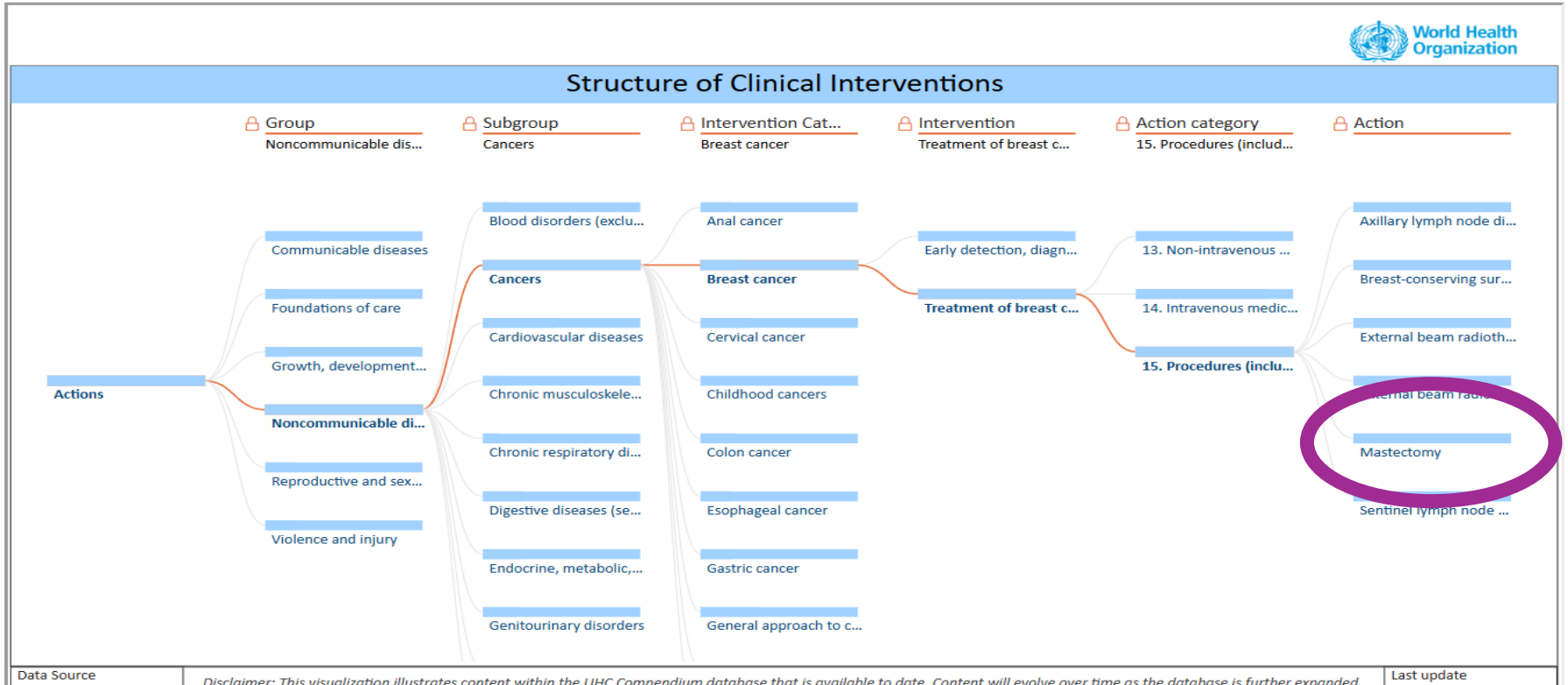
A	B	C	D	E	F	G	I	J	K	M	N	O
MEDEVIS Grc	Automat	Nam	Group	DESCRIPTION	HEALTHCARE SE	CSD_618	Reusable/Si	"Name WHO Generic "	ITEM C	Shape Fea	Edge Fe	Specific Fe	Specific Size (Feature)
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	TESK_076	Reusable	Basket, sterilization	2			Specific Size	480 x 255 x 100mm,Ref 49.97.13
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	RMN_032	Reusable	Bowl, stainless steel, round	3			Specific Size	100 ml, 80 x 35 mm
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	TESK_061	Reusable	Forceps, dressing, Blank	2		Serrated	Specific Size	145 mm
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	SUR_137	Reusable	Forceps, Crile-Rankin, curve	6	Curved		Specific Size	140 mm
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	SUR_139	Reusable	Forceps, Foerster, straight	2	Straight	Serrated	Specific Size	240 mm
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	SUR_103	Reusable	Forceps, Allis	4		Teeth	Standard	150 mm/4x5 teeth
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	SUR_048	Reusable	Forceps, Babcock	4		Teeth	Standard	16 cm, 9 mm jaws
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	SUR_119	Reusable	Forceps, Backhaus	8			Specific Size	130 mm
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	SUR_082	Reusable	Dish, kidney	2			Medium	250x140x40mm, 2000ml
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	TESK_086	Reusable	Needle holder, Mayo-Hegar	2			Standard	150 mm
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	COM_410	Reusable	Ruler, metal	1			Specific Size	100mm
PACK_0372	Mastectomy Set		Set	Mastectomy Set	General surgery	TESK_089	Reusable	Retractor, Roux	2			Specific Size	1,2,3

Interventions by programme area
Life course distribution
Addressing SDG goals
Explore the database

School Health
Health promotion
Primary care
TB
Neglected Tropical Diseases
Surgery and anesthetic
Non-Communicable Diseases (NCDs)
Mental Health, Neurologic Disorders

World Health Organization
Health Topics
Countries
Newsroom
Emergencies
Data
About WHO

Architecture of clinical services
Interventions by programme area
Life course distribution
Addressing SDG goals
Explore the database
Survey
Frequently asked



World Health Organization

Thank you for your contribution and attention!

Panel 5

Therapeutic medical devices

World Health Organization

Q&A Discussion

Thank you, Merci, Спасибо, Gracias, 謝謝, شكرًا لك‘

World Health Organization

Look forward to seeing you,
Tomorrow at 12:00 PM CET