17th TechNet Conference

Panama City, Panama | October 16-19, 2023

Immunization Programmes That Leave No One Behind

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Cold chain challenges and solutions

October 18, 2023

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Change to protect

Alejandro Ortega Amador, National Cold Chain Responsible, Nicaragua

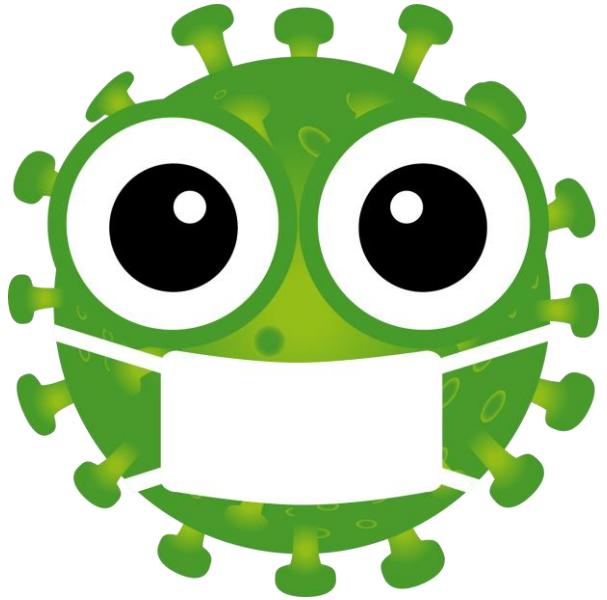
October 18, 2023

SARS-Cov2 Pandemic

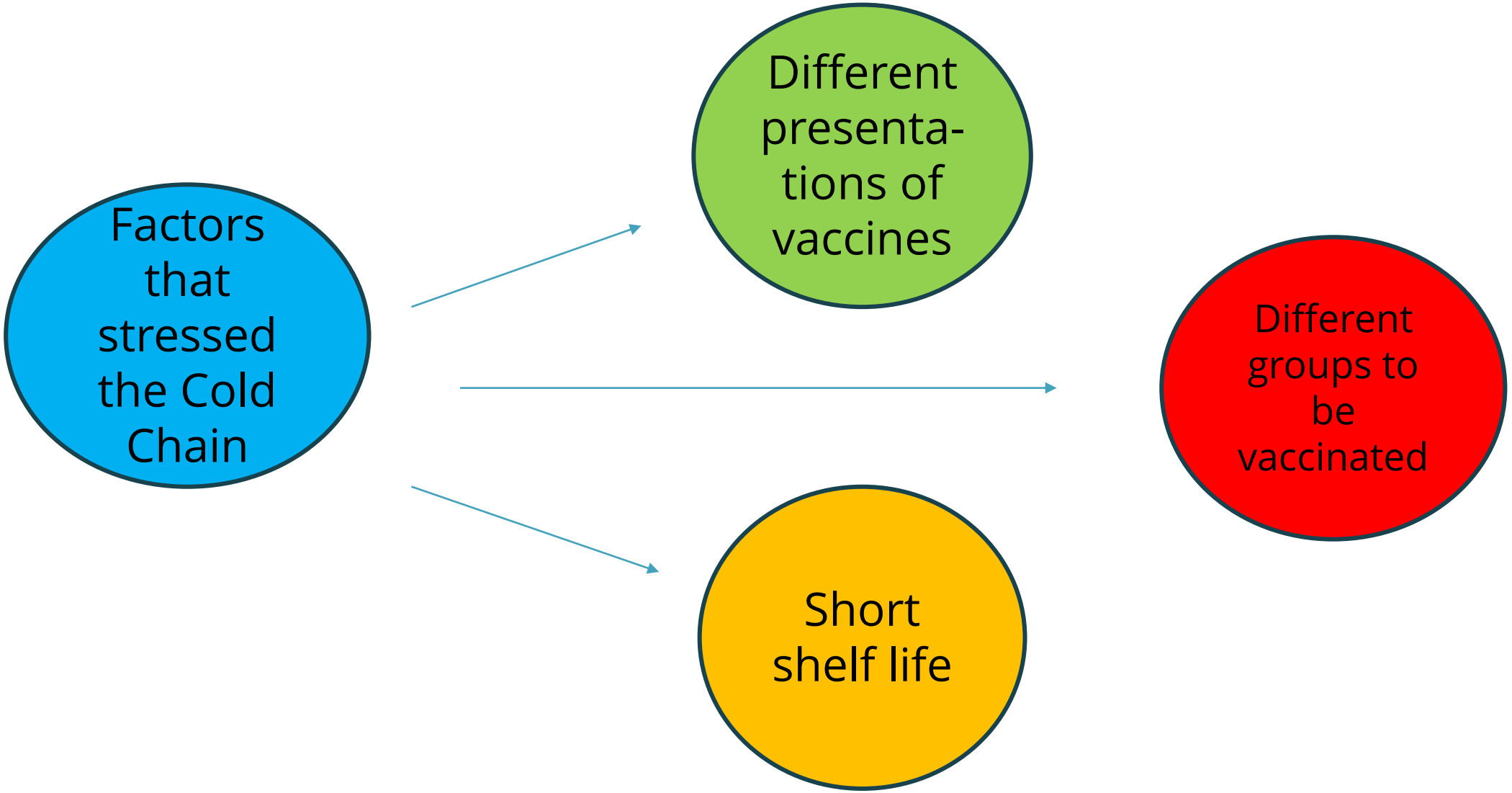
- The SARS-Cov2 pandemic forced countries to implement coping strategies and mitigation at all levels that addressed many areas of the lives of the population and the performance of health systems, including the storage capacity of the new COVID-19 vaccines.

- Storage capacity of the new COVID-19 vaccines, which were developed on different platforms.

- Storage conditions rarely used in the EPI, such as vaccines requiring ultra-low temperatures (-70 °C).



SARS-Cov2 Pandemic



Nicaragua

POPULATION 2023	
Total Country	6,803,800
0 año	|126,204
1 año	127,455

Vaccination schedule

Vaccine type	Vaccine Presentation (doses/vial)	Doses based on schedulema, (doses/target)	Average volume per dose (cm3)	
			Vacuna	Diluyente
BCG	10	1	2.2	2.2
DTP/HB+Hib	1	3	17.2	
MMR	1	1	26.1	26.1
OPV	20	3	0.7	
DTP	10	1	2.4	
Td	10	2	2.9	
RotaTeq	1	3	46.3	
Rotarix (aplicador)	1	2	85.3	
PCV-13	1	3	13.8	
Influenza pediatrica	10	1	12	
Influenza de adultos	10	1	17.82	
IPV	1	1	15.7	
Hepatitis B	1		15.8	
Fiebre Amarilla	10	1	2.6	4.6
Antirrabica humana	1		3.0	
Covid-19	1	2	18	
VPH	5	2	18	

SUPPLY CHAIN OVERVIEW

Logistics Structure

National Warehouse

SILAIS warehouse

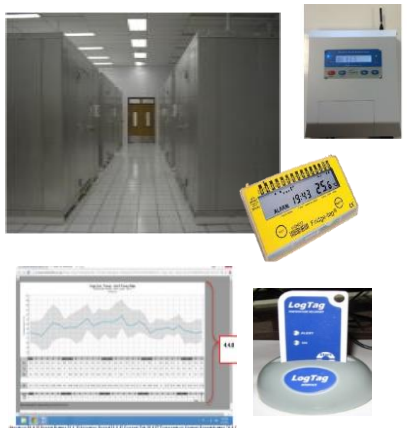
Municipal Warehouse

Health post

Community

Cold chain equipment

Reception and distribution of vaccines



Sub National Warehouse

Municipality Warehouse

Health Post

ESAFC/GISIS
Vaccination of the population

Analysis of the Cold Chain pre-covid19

Evaluation of the effective management of vaccines carried out in 2015:

- Gap in the storage capacity for the vaccines of the program,
- The country developed an improvement plan that included; **purchase of new equipment, renewal of equipment more than 15 years old and creation of regional biological warehouses.**

- ✓ Temperature monitoring study.
- ✓ Real-time remote temperature monitoring system.
- ✓ Gradual replacement of refrigeration equipment, generators, stabilizers, cold boxes, thermoses.
- ✓ Acquisition of refrigerated vehicle.
- ✓ Acquisition of a 30-day continuous recording monitoring device.
- **Construction of 4 regional warehouses.**
- ✓ Temperature mapping.
- ✓ Vaccine inventory control system on Intranet.
- ✓ Use of freezing indicators.
- ✓ **Updated equipment inventory**
- ✓ Update of the EPI standard.

Analysis of the Cold Chain pre-covid19

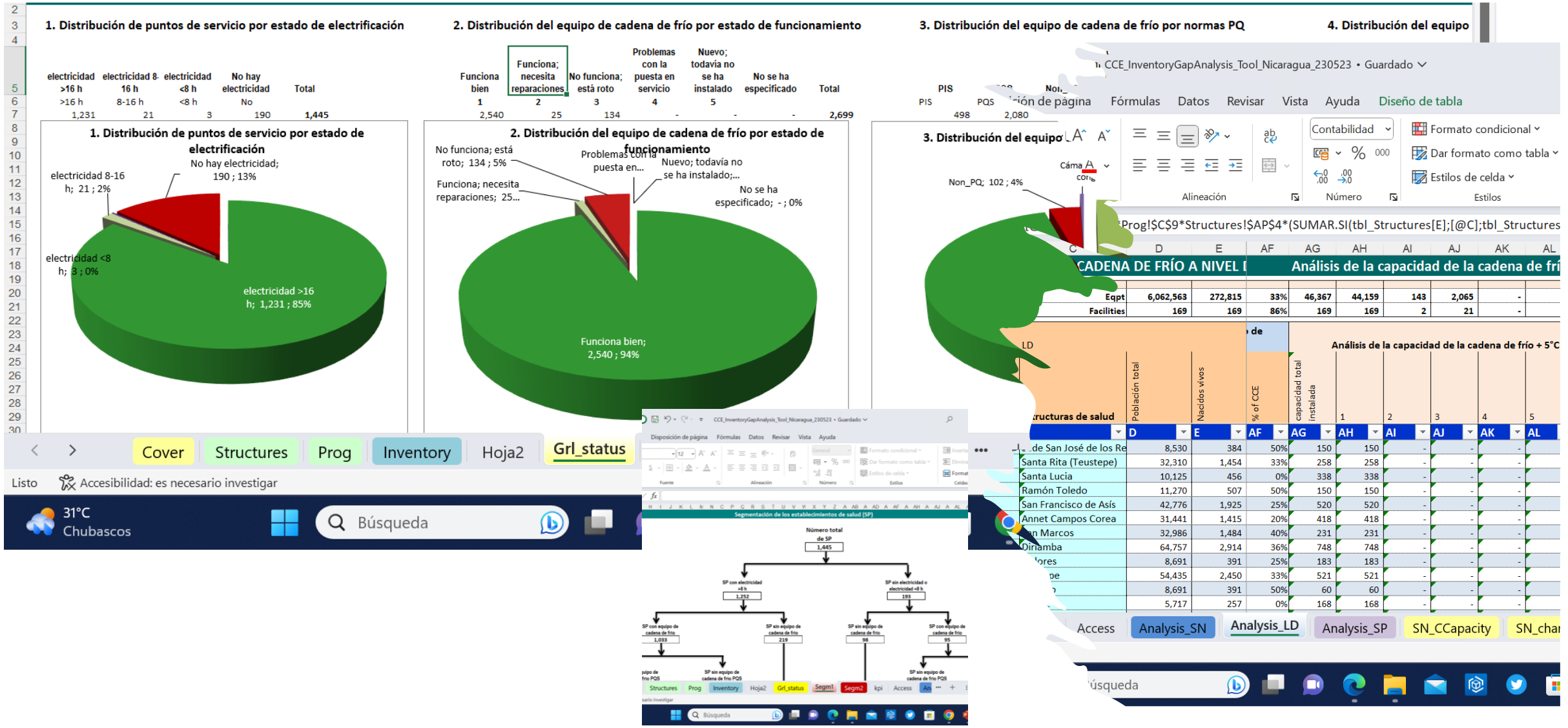
Inventory and storage capacity analysis

- Availability of updated of cold chain equipment inventory by level, storage capacity, model, make, manufacturer, location and other critical variables.

- These inputs, plus the use of tools as:
  - *CCE_InventoryGapAnalysis_Tool*
  - *Sizing tool y*
  - CCEM

- Keys to defining the gap at the national and subnational levels that allowed the rapid development of a new plan that will ensure the quality of vaccines and facilitate access at the municipal level.

Report visualizations of digital tools

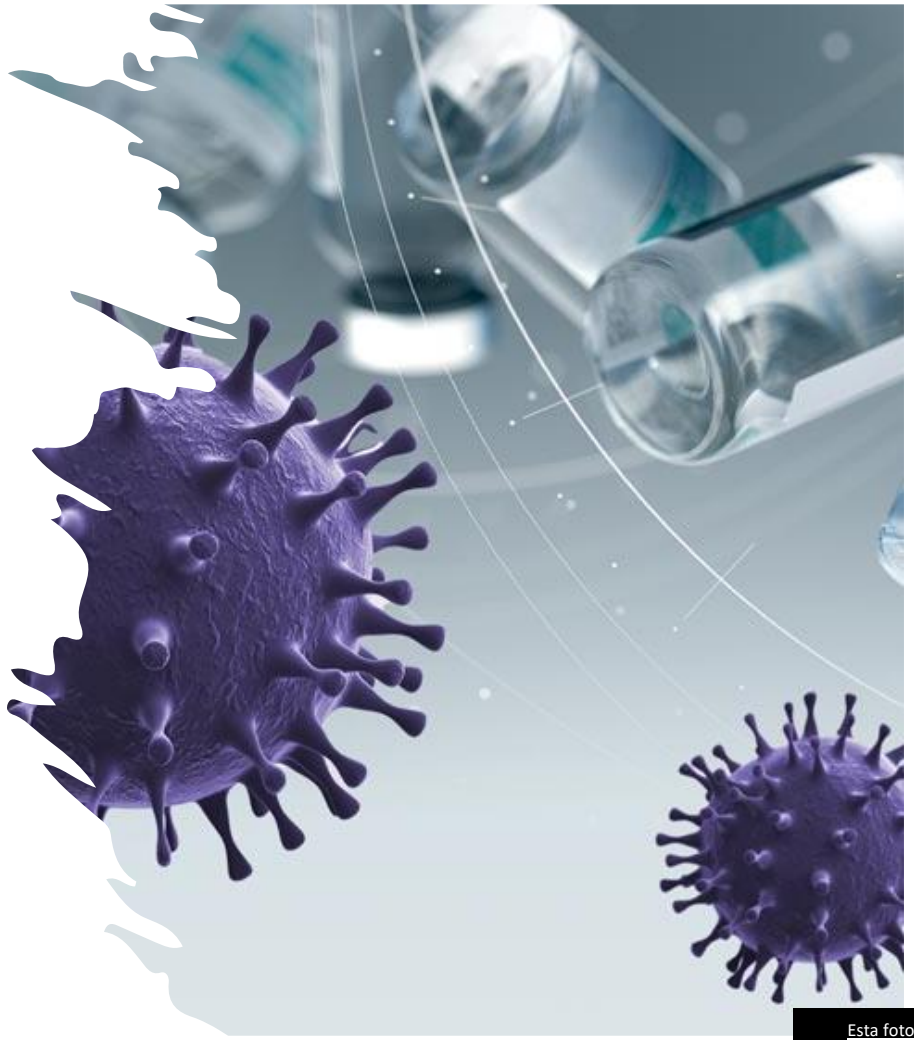


Response to Covid-19 pandemic

- The first phase of the plan consisted of the expansion of the storage capacity at the national level with equipment to maintain different types of vaccines according to their storage temperature conditions, prioritizing vaccines between (+ 2 °C to + 8 °C) and based on the expected population to be vaccinated of 20% in addition to the regular program.
- The largest gap was at the SILAIS level. (Sub-national).

Response to Covid-19 pandemic

- In 2022, there was greater access to vaccines of different storage conditions and volume, which led to:
  - Increase in population groups,
  - New tension in storage capacity at the national level and SILAIS.
  - Update cold chain equipment acquisition plan.
- The storage capacity was gradually increased through donations from donors such as PAHO, COVAX-GAVI, Japan, UNICEF and loans from banks.



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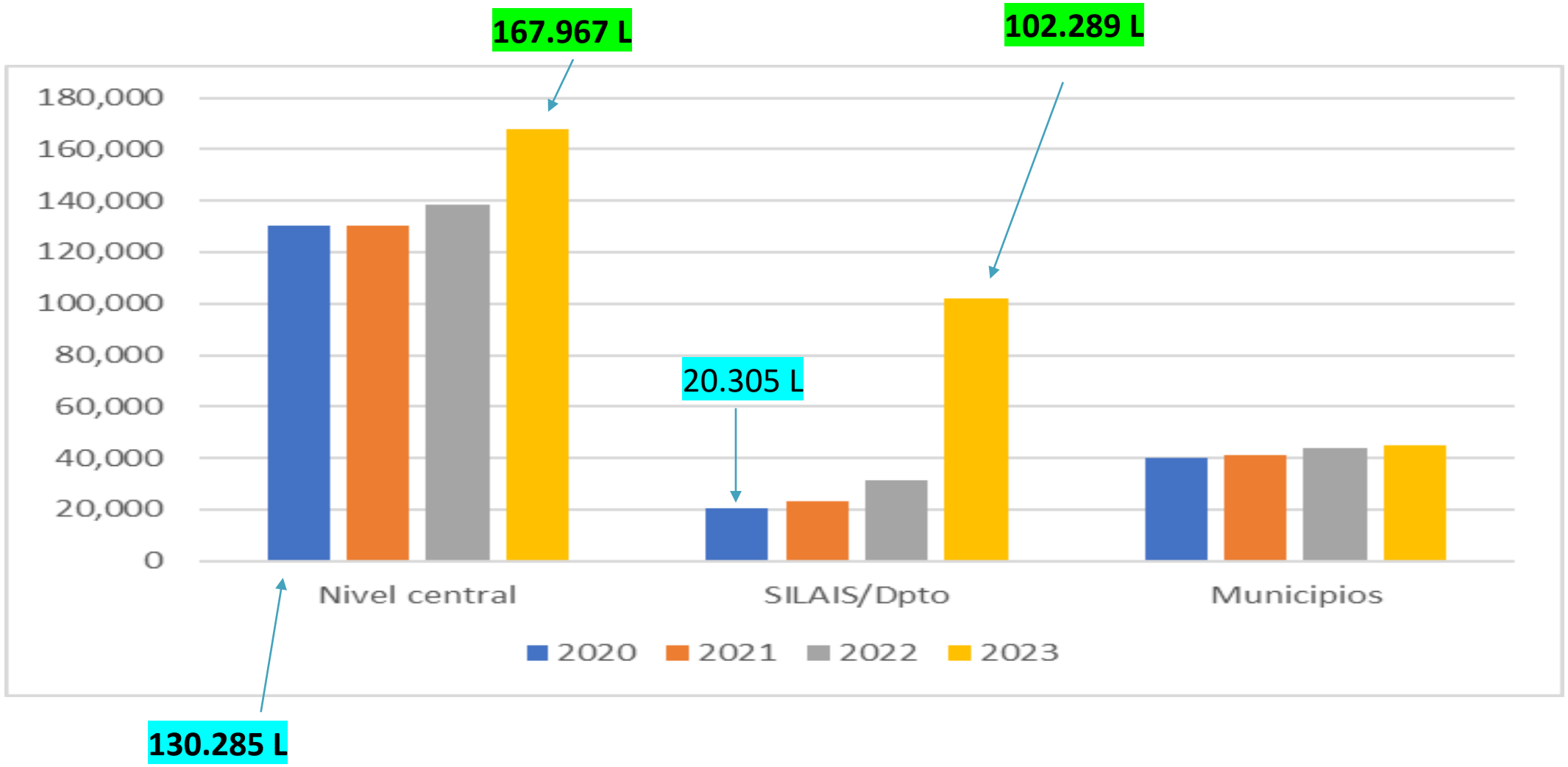
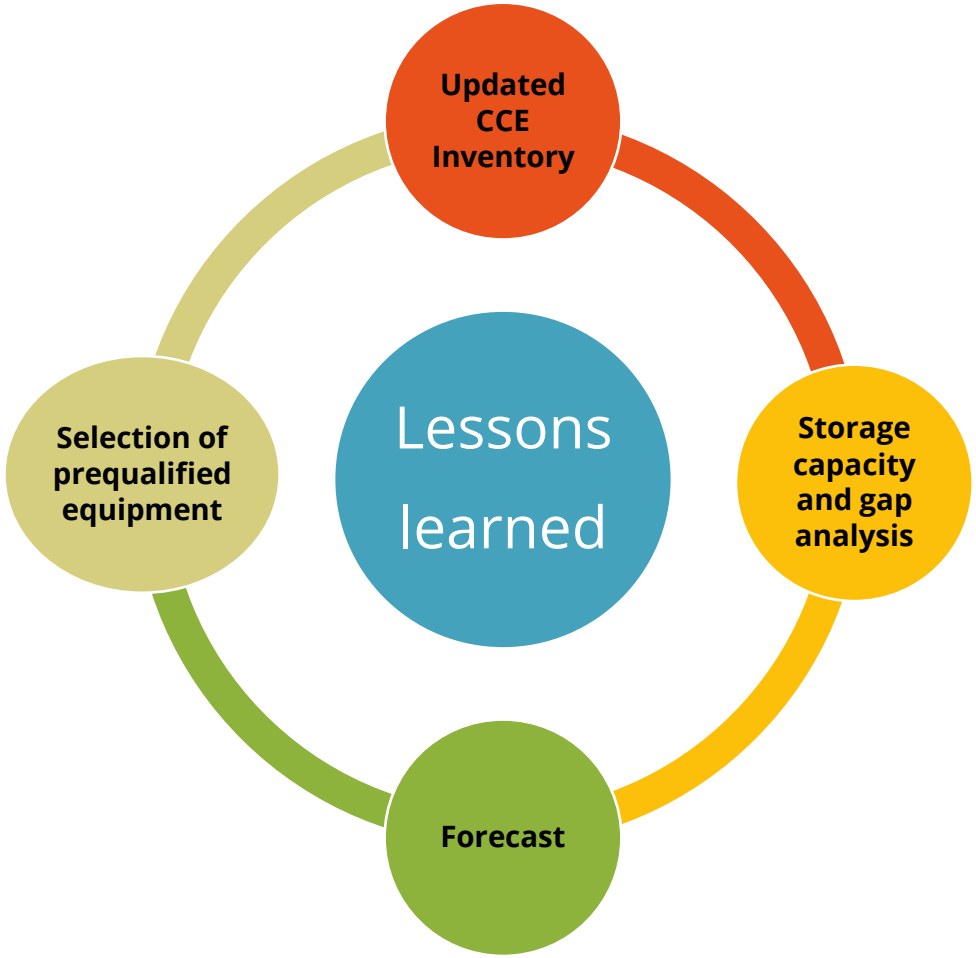
Comparative storage capacity in liters (+5°C). Nicaragua 2020-2023.

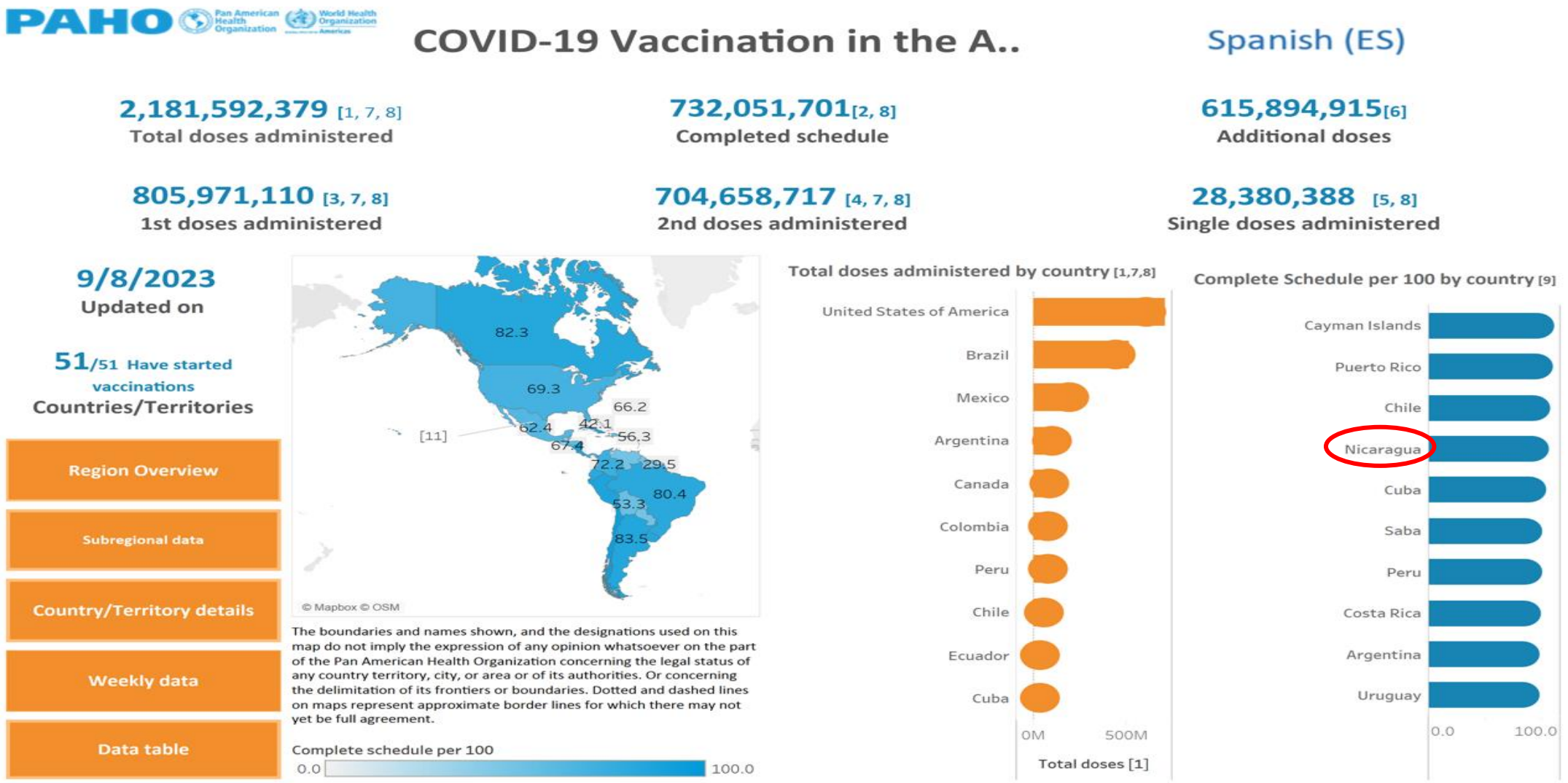


Lessons learned

- Maintain updated inventory.
- The use of technologies optimizes analysis for timely decision making.
- Making five-year forecasts of the need to renew and expand storage capacity helps to ensure an appropriate cold chain in the event of an upcoming epidemic and the introduction of new vaccines.
- Proper planning of vaccine distribution coupled with vaccination strategies in the field decreases wastage, increases vaccine turnover and facilitates access to vaccination for the population.
- The use of WHO-prequalified, state-of-the-art equipment and the updating of health personnel are essential to ensure vaccine quality.



Benefits for the population



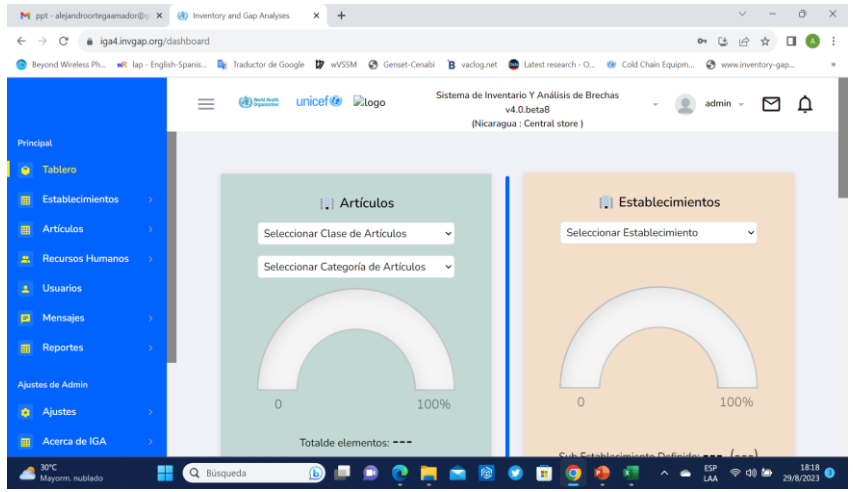
[COVID-19 vaccine doses administered in the Americas (paho.org)]

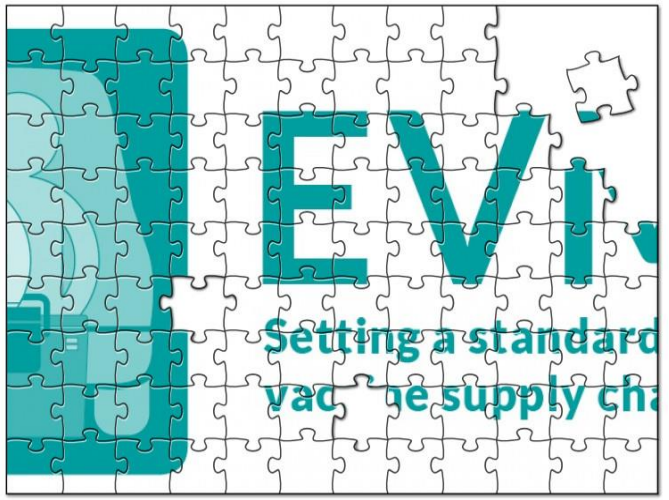
Next challenges

- On-line implementation of the deployment of the IGA tool for cold chain equipment inventory management.
- Training of administrators and users on the IGA tool. October 2023.
- GEV 2.0 Evaluation.

Inventory and Gap Analysis (IGA)

Version 4.0





Thank you!

Ing. Alejandro Ortega. Nicaraguan Ministry of Health.
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Strengthening the cold chain as part of the anticovid vaccination strategy in Cuba

Lena López Ambrón, National Manager of PAI in Cuba.

Alina Pérez Carreras, PAHO Focal Point in Cuba.

October 18, 2023

Content

- National Health System: National Immunization Program.
- Anticovid-19 mass vaccination campaign.
- Maintenance of routine scheme coverage in pandemic years.
- Impact of strengthening the cold chain.

National Immunization Program

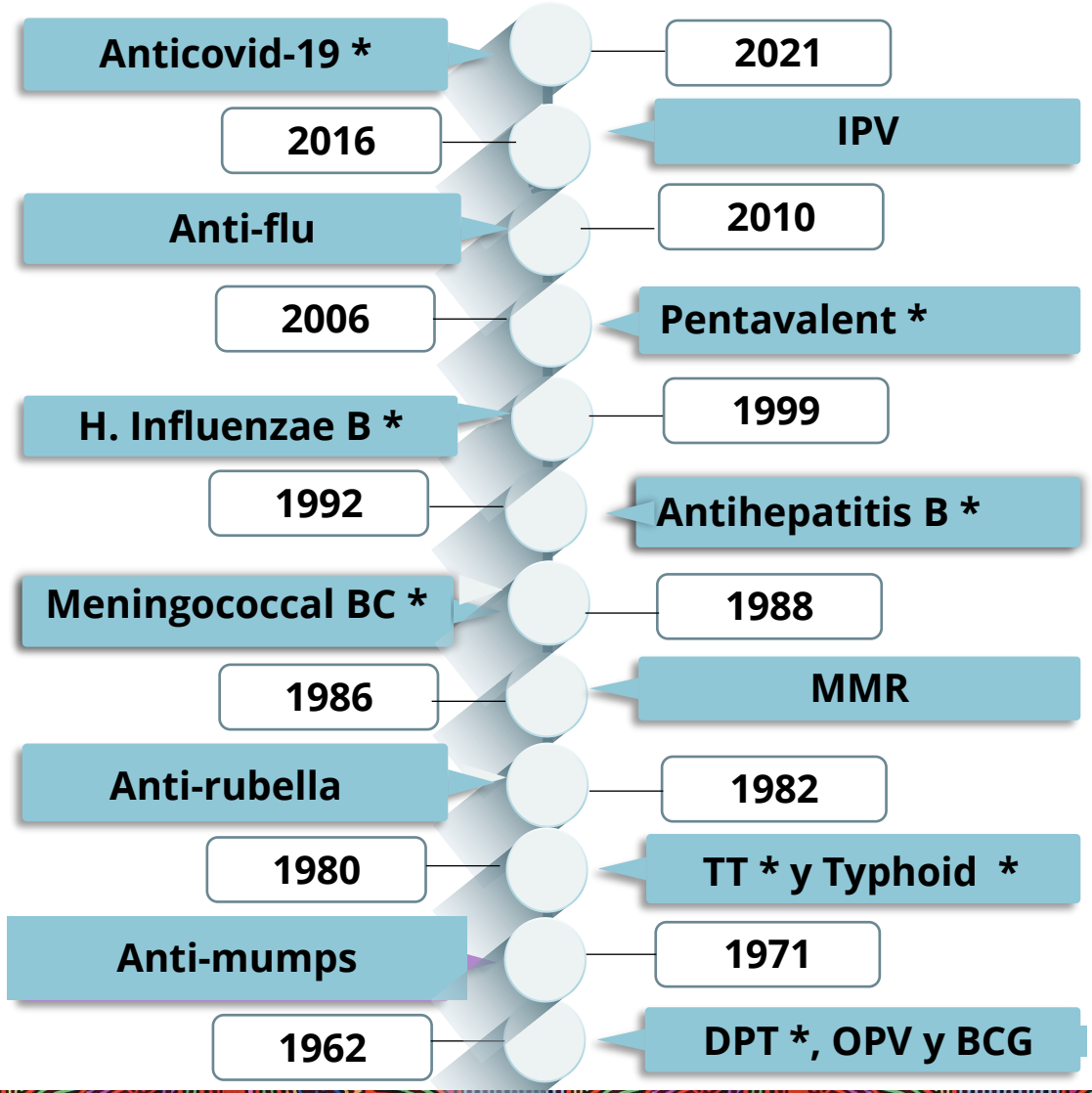
Created 61 years ago:

- ✓ Integrated at all levels of the health system with emphasis on PHC.
- ✓ Free of charge.
- ✓ Aimed at the entire population following the life course.

Protects against **16 diseases and four severe forms, with 20** single or combined **vaccines.**

- ✓ **12 of domestic production (*).**
- ✓ **8 imported.**

To risk groups:
Antirabies: 1962
Anti-flu adult: 1997
Antileptospirosis* : 1996
Antiamarillic: 1901
Antihepatitis B adult * : 1992

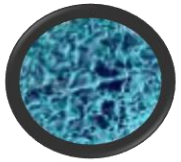


PHC: Primary Health Care

Impact of the National Immunization Program

Creation of the NIP

1962

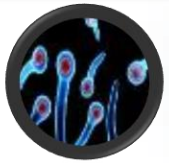


Neonatal tetanus and Tuberculous meningitis

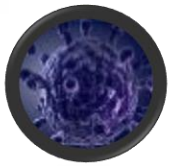
Tetanus

1962 — **1972** — **1979** — **1987**

Poliomyelitis — **Diphtheria**



Yellow fever: 1904
Bubonic plague: 1915
Smallpox: 1923



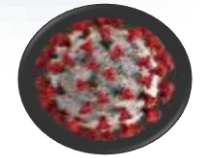
Pertussis

Congenital rubella syndrome and post parotitis meningitis

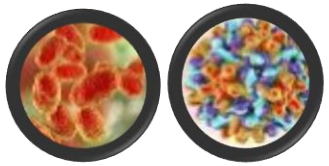
1995 — **1994** — **1993** — **1989**

Rubella y Leptospirosis

Measles



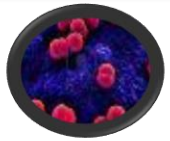
Meningococcal disease



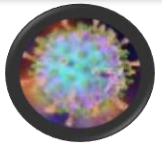
Mumps

2000 — **2002** — **2003** — **2010** — **2021**

Typhoid fever



H. Influenzae type b meningitis and Hepatitis B.

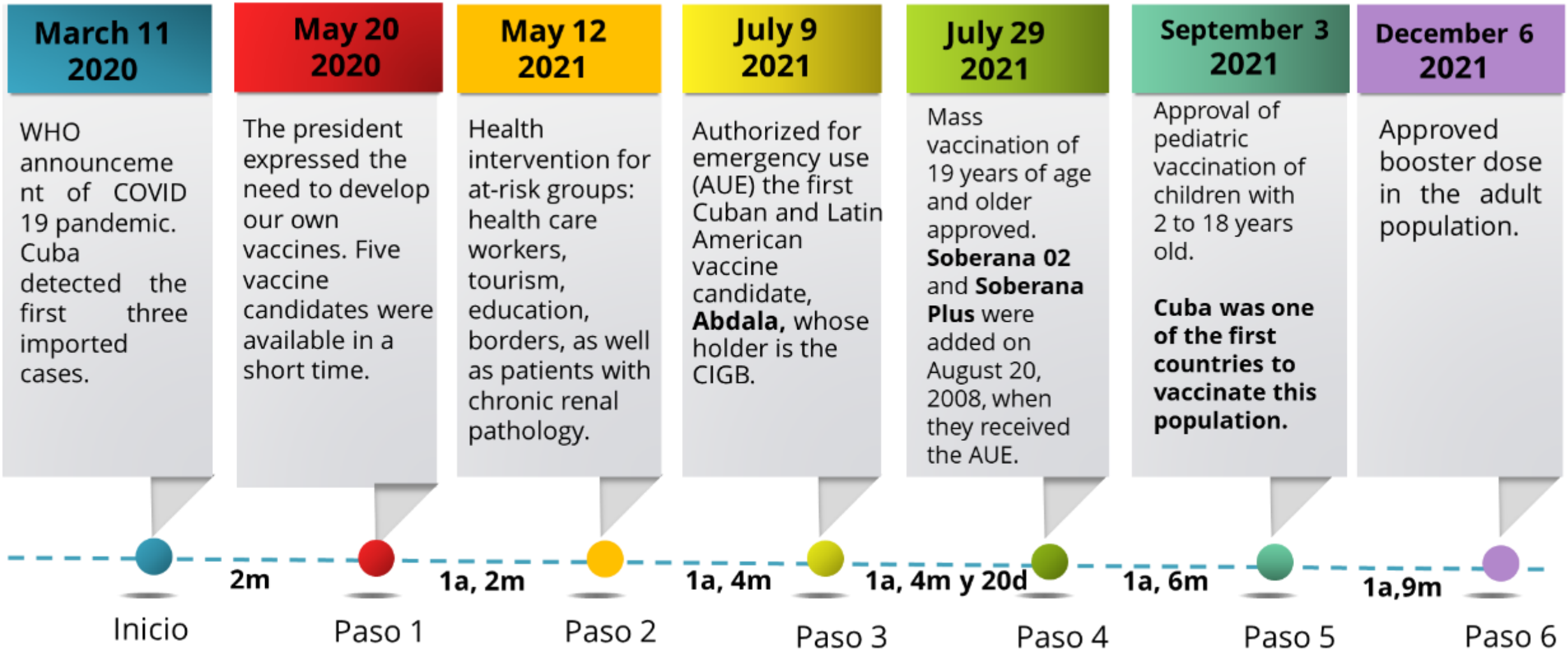


Covid -19

Leyend

- Eliminated (13)
- Controlled (7)

Anticovid-19 vaccination strategy



Anticovid-19 vaccination actions

- Design, control and daily evaluation of the routes for the transfer of vaccines from the polyclinics to the vaccination points, ensuring the cold chain.
- Enabling 11,649 Family Medical Offices and other premises as vaccination points.
- Certification and equipment of vaccination points.
- Incorporation and training of 23,300 nurse vaccinators and their reservation for new vaccinations.
- Incorporation of medical and nursing students for the citation and organization of the population.

VACUNAS CUBANAS COVID-19

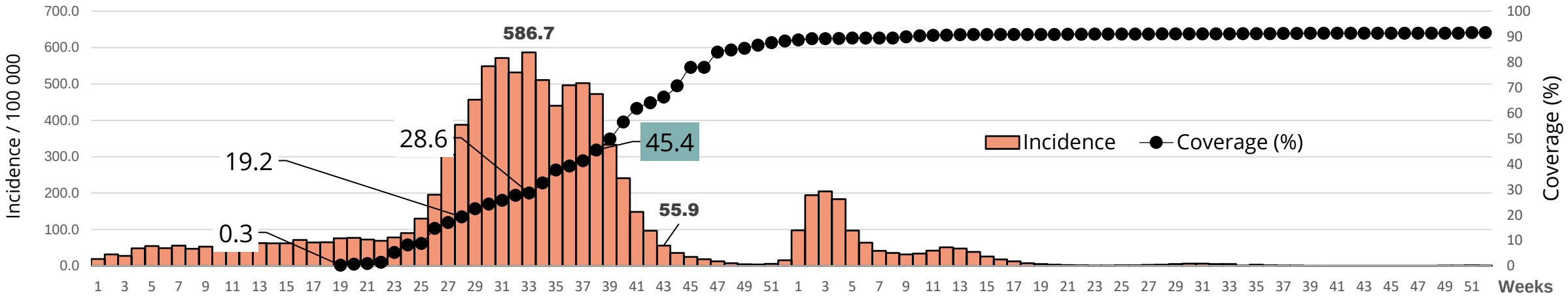
Anticovid-19 vaccination actions

- Citation by population strata (over 60 years old, 40 to 59 and 19 to 39 years old), by names and surnames, identity card, indicating the day and time of vaccination.
- Provision of premises for post-vaccination surveillance with allocation of human resources, emergency stock and ensuring physical distancing.
- Printing of statistical models of vaccination and surveillance of ESAVI.
- Application of a home vaccination protocol for bedridden, severely disabled and long-lived persons.

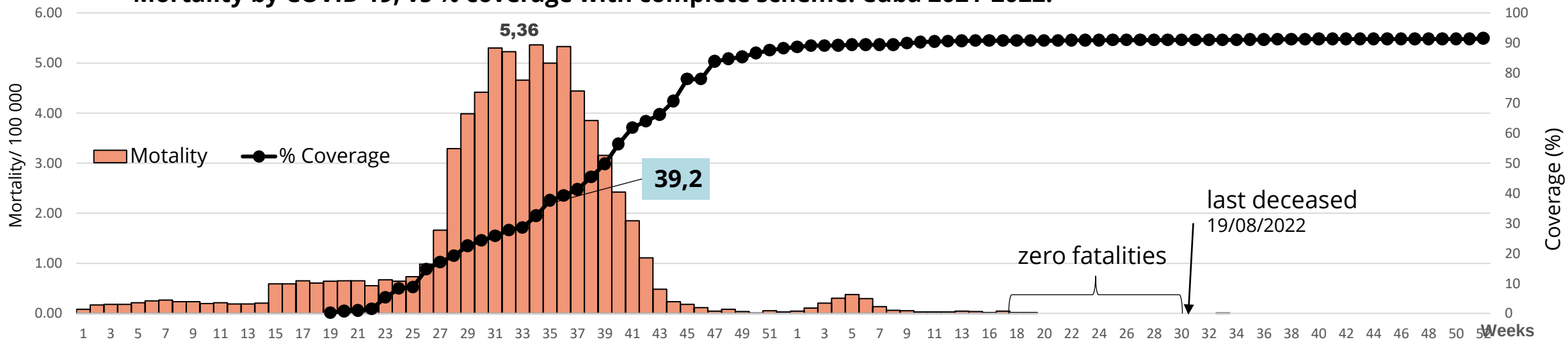
VACUNAS CUBANAS COVID-19

Impact of anticovid-19 vaccination

Incidence by COVID 19, vs % coverage with complete scheme. Cuba 2021-2022.



Mortality by COVID 19, vs % coverage with complete scheme. Cuba 2021-2022.



Pediatric anticovid-19 vaccination campaign

September 3

Initiated vaccination in students of 12th grade and last year in the polytechnical education.
Universe of 120,349.

September 5

Vaccination began in children and adolescents from 12 to 18 years of age.
Universe of 706,995.

September 15

Start of vaccination in children from 2 to11 years of age.
Universe of 1,133,004.

By October 30, 2021, 97.5% of the pediatric population with a full schedule

Joint work MINSAP- MINED

The educational centers of all the teachings and the children's circles closed by the Covid-19, opened their doors as vaccination points for their students.

Vaccination strategy to maintain routine vaccination coverage in pandemic years.

- Nominal identification of children pending one or more vaccinations according to health area.
- Active capture (phone call and messages). Passive capture media targeting (TV, radio, press, social networks, etc.).
- Opening of new vaccination points to bring the service closer to the communities.
- Home to home vaccination when necessary.
- Waiting rooms to maintain distance in post-vaccination surveillance.
- Take advantage of the vaccination opportunity in case of visiting the health center for another reason.
- Co-administer at the same time all the vaccines indicated and allowed according to technical data sheets.
- Use accelerated schemes if necessary.
- To recover school vaccinations once schools are open.
- Weekly analysis of recovered and overdue children at all levels of program implementation until none remain outstanding.

Impact of vaccination strategy to maintain routine vaccination coverage in pandemic years .

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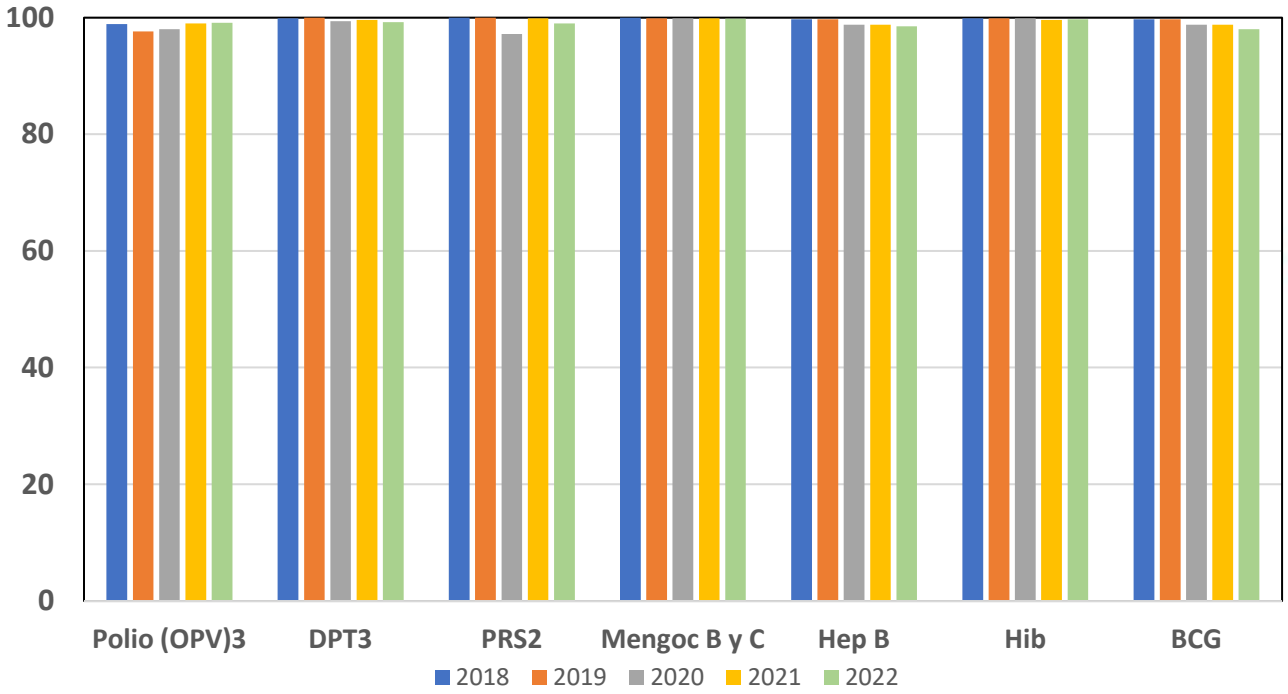
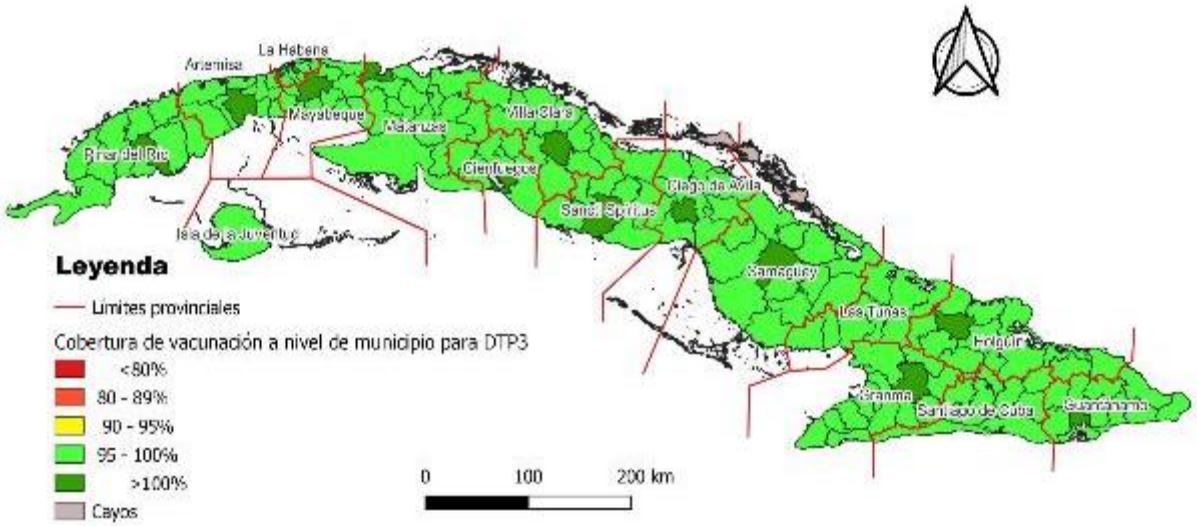
National vaccination coverage (%), 2018 - 2022.

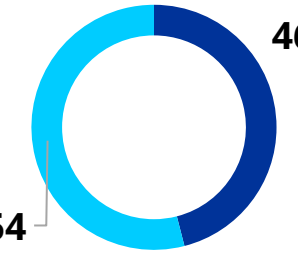


Vaccination coverage (%) with DPT-3 in <1 year by municipality, Cuba 2021.

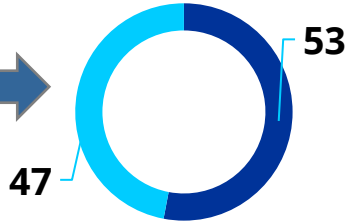


Strengthening of the cold chain with support from PAHO and UNICEF

1,065 refrigerators E003/082



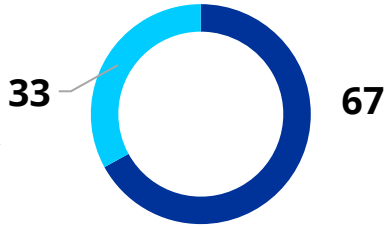
2,851 1.5 liter vaccine carriers E004/050



400 6-liter vaccine carrierss E004/035

unicef

16,829 ice packs



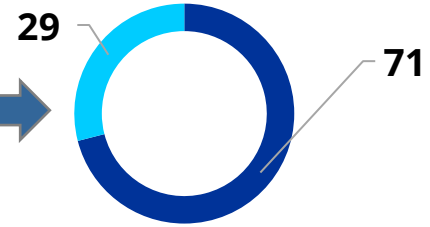
3 million USD:
1.3 OPS + 1.7 UNICEF

500 freeze indicators E006/015

OPS

Canada

5,789 temperature monitoring devices E006/040

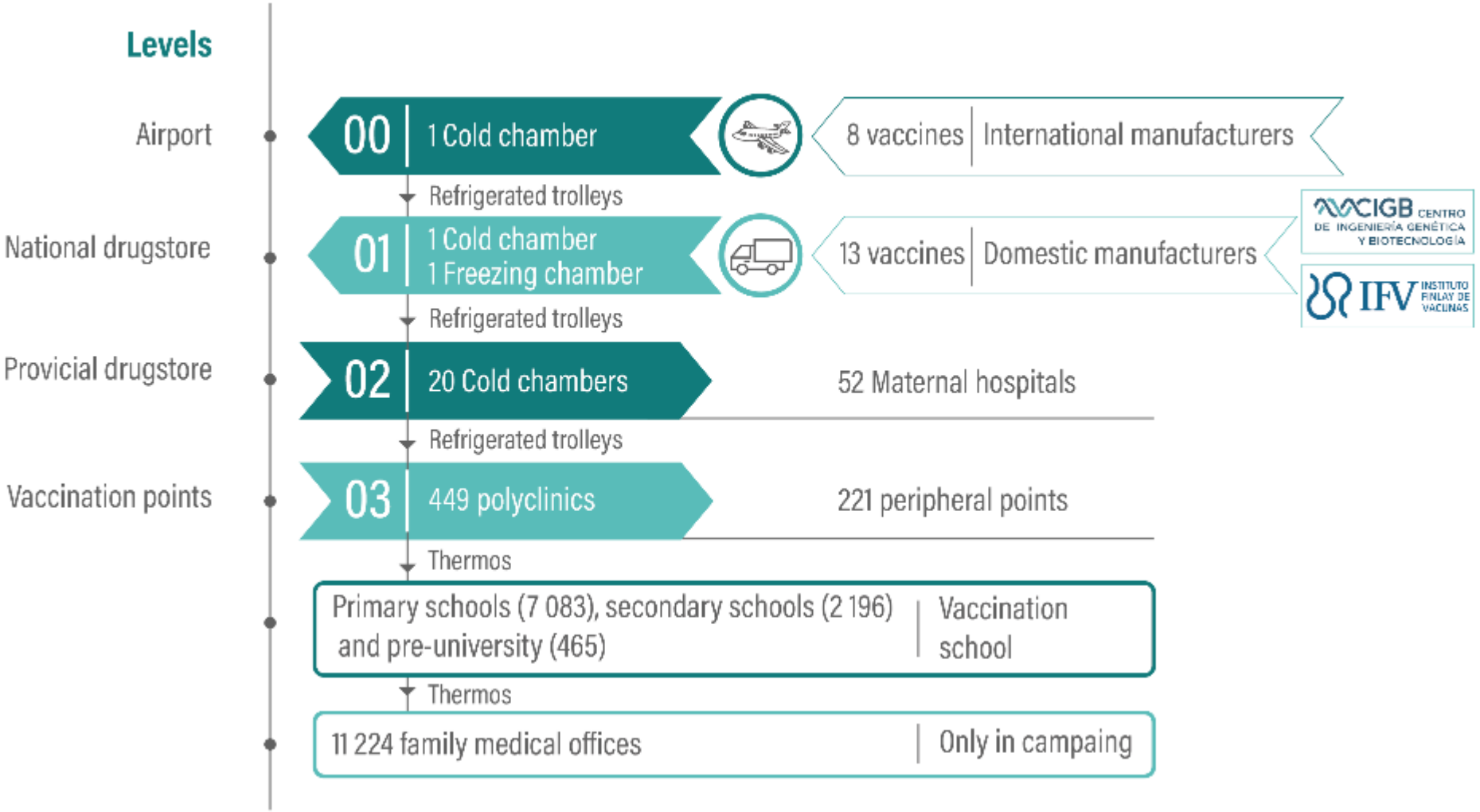


1,513 temperature monitors for vaccine carriers E006/046

unicef

UNICEF OPS

EPI Cold chain structure



Impact of strengthening the cold chain PQS of vaccines

- ✓ Opening of new vaccination points, bringing the service closer to the communities.
- ✓ Reinforced home-to-home and school vaccinations with new vaccine carriers.
- ✓ Increased the degree of personnel satisfaction with the new equipment acquired.
- ✓ Increased the safety of vaccine conservation with the acquisition of 70% of the refrigerators needed in the country, with prequalified equipment.
- ✓ Expansion of storage capacity with additional possibilities for the introduction of new vaccines.
- ✓ Guarantee of temperature control with continuous temperature monitoring devices, in 100% of the country's vaccine refrigerators.
- ✓ Increased conservation time of vaccines in the event of electrical failures or other contingencies.

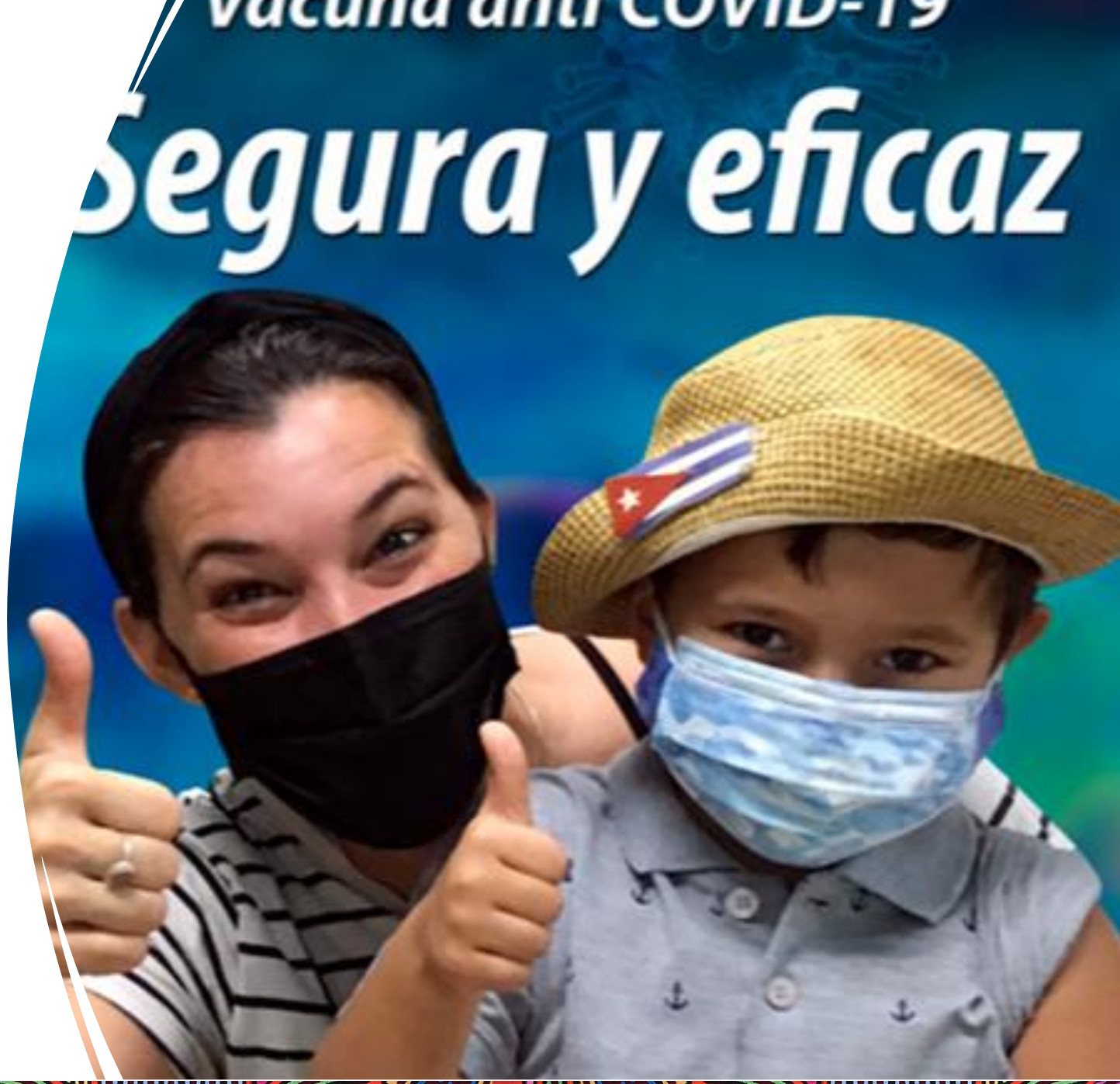
Next steps

- Acquire a combined cold room/freezer room storage facility for the José Martí International Airport.
- Complete the remaining 30% of vaccinators with prequalified refrigerators.
- Conduct a international workshop on Effective Vaccine Management (GEV.2.0) to train HCW and provide implementation tools.

Thank You!

Lena López Ambrón, lopezlena26@gmail.com

Alina Pérez Carreras, perezali@paho.org



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Colombia Nominal Vaccination Information System (PAIWEB)

Claudia Liliana Sosa, Specialized Professional, Expanded Program on Immunization

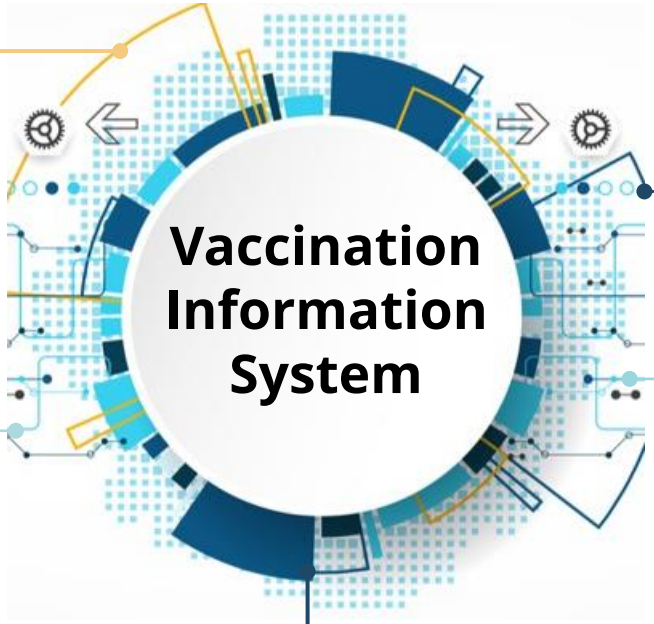
October 18, 2023

PAIWEB Generalities

Objectives of PAIWEB

Improving the **timeliness** and **quality** of information for decision making

Improve **management** (inventories, distribution, conservation, storage and transportation) of biologicals and supplies



Enable **nominal traceability** of vaccine administration

Optimize the collection and availability of vaccination data (people, supplies, biologicals, institutions, human talent and cold chain capacity)

Improve the **efficiency and effectiveness** of vaccination by making information available online

PAIWEB 2 in data

+53 M

People

+330M

Recorded doses

+11K

Active users

+ 2.600 K

Active institutions

Vaccine traceability through the information System PAI WEB 2.0

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Inventory module: Control of entries, dispatches, application of biologicals, control of losses, transfers.

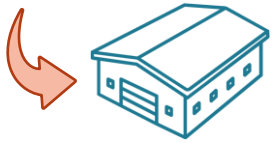
National warehouse

Airport

Production laboratory

Regional/District Warehouse

Order module: Calculation and request of biologicals and supplies by level



Local Warehouses (Health Centers)

Cold chain module: Optimal vaccine conservation, inventory and cold network capacity

Trazabilidad del pedido

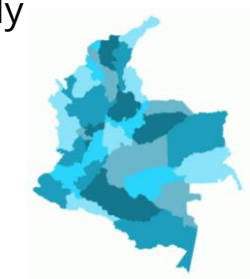
Resultados obtenidos: 4

Número de elementos por página: 10

Estado	Fecha	Usuario	Institución	Observación
Creada	17/01/2021	Claudia Sosa	VILLAVICENCIO Secretaría de salud municipal	PEDIDO PRIMERA ETAPA-FASE 1
Aprobado	17/01/2021	Claudia Sosa	META Secretaría de salud Departamental	PEDIDO PRIMERA ETAPA-FASE 1
Pedido aprobado y enviado	17/01/2021	Claudia Sosa	META Secretaría de salud Departamental	PEDIDO PRIMERA ETAPA-FASE 1
Pedido recibido	17/01/2021	Claudia Sosa	VILLAVICENCIO Secretaría de salud municipal	ingresa en cajas de Pfizer - ultracongelación

Biological Matrix Module: Biological Configuration and Schemes

Dashboard module,reports,statistis: Information on doses applied , daily record, monthly consolidated

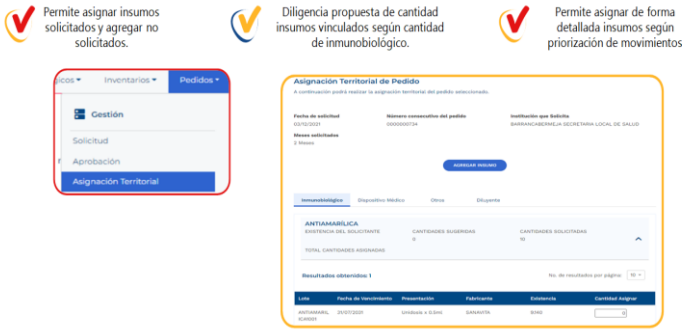


Vaccinators

Biological management module: Nominal record with basic user data and data on the applied,vaccine card

Target Population

Structure PAIWEB



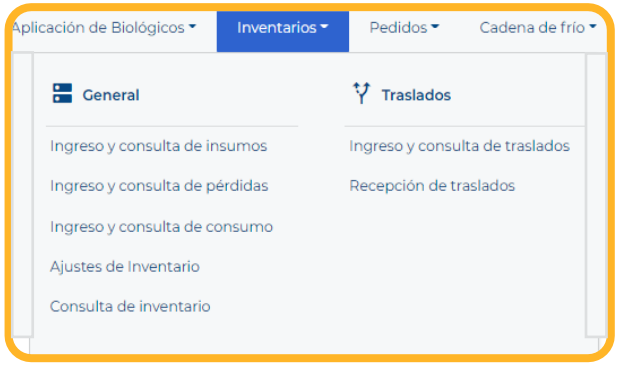
- Application Module
- Orders Module
- Inventory Module
- Cold chain Module
- Administration Module, user management and audit
- Biological and inputs matrix module
- Reports module, control board, statistics and search engine.

Traceability in schemes through unified registration and updating of socio-demographic data. Vaccine information and history of newborns, children and adults.
Interoperability for basic personal data and insurance.

Calculation of needs of each item according to the assigned target and the vaccination schemes at each level, including the IPS.

Traceability of orders from request to receipt.

Structure PAIWEB



- Application Module
- Order Module
- **Inventory Module**
- **Cold chain Module**
- Administration Module, user management and audit
- Biological and supplies matrix module
- Reports module, control panel, statistics and search engine.

Enter supplies and provide detailed information on each one (expiration dates, batches, quantity).

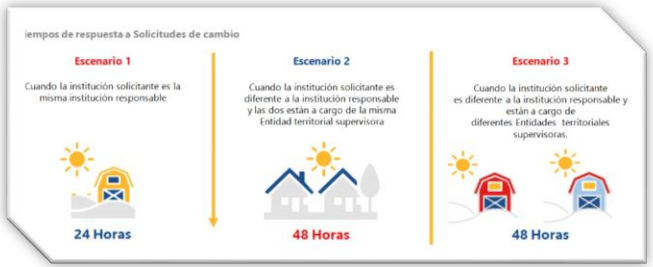
It facilitates the allocation of supplies and allows to see traceability from purchase to application.

Interoperability with Operations Management for inventory monitoring in PAIWEB with the warehouse of Ministry of Health and Social Protection.

Traceability in supply and equipment management by automating the registration and monitoring of cold network equipment inventories, their maintenance and storage capacity and conditions at each level.

Notification, management and monitoring of temperature excursions (Invima)

Structure PAIWEB



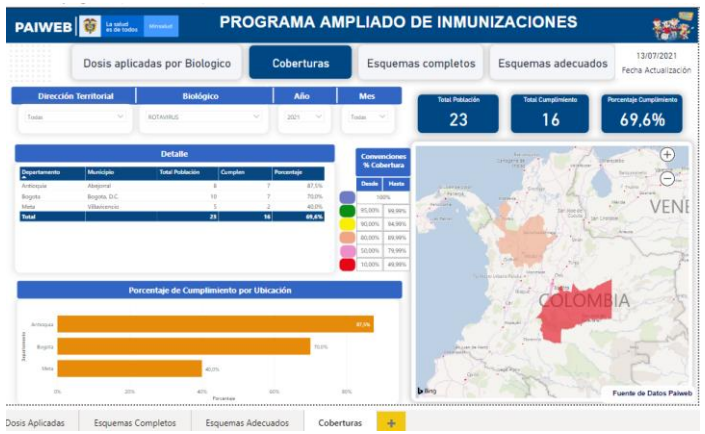
- Application Module
- Order Module
- Inventory Module
- Cold chain Module
- **Administration Module, user management and audit**
- **Biological and supplies matrix module**
- Reports module, control panel, statistics and search engine.

Management of users, roles, institutions, insurers. System parameterization.

Interoperability with REPS for verification of authorization codes of the institutions that operate the PAIWEB

Autonomy in changes related to the configuration of biological and vaccination schedules

Structure PAIWEB



- Application Module
- Order Module
- Inventory Module
- Cold chain Module.
- Administration Module, user management and audit
- Biological and supplies matrix module
- **Reports module, control panel, statistics and search engine.**

Traceability of the program by generating multiple reports, monitoring processes, viewing order and inventory control boards, and consulting information in the system of different modules.

Interoperability with SISPRO for data storage in data cube and dashboard themes

NEW!

Mobile Application: Use of the system in remote areas with mobile devices increases accessibility.

Cold Chain Module

Inventarios | Pedidos | Cadena de frío | Cohortes | Reportes | Admin

Equipos

- Catálogo Equipo
- Inventario
- Temperatura Ambiente
- Traslados

Pérdida de Cadena

- Cuarentena
- Pérdida de Cadena

Reportes

- Capacidad volumétrica
- Mantenimiento de equipos
- Equipos de apoyo
- Consolidado evento por estado
- Consolidado evento por territorio
- Consolidado de causa por evento
- Consolidado de dosis por evento
- Ruptura de cadena de frío

Cold Chain Module - CCE Inventory

Inicio > Cadena de frío > Equipos > **Inventario**

Inventario de equipos

A continuación, usted podrá consultar los equipos que hacen parte del inventario de cadena de frío del PAI.

Consultar Inventario de equipos

Los campos con asterisco (*) son obligatorios

Institución Nacional*
MINISTERIO DE SALUD Y PROTECCION ...

Institución Departamental
BOGOTA SECRETARIA DE SALUD DE B...

Institución Municipal
INSTITUCION: SUBRED INTEGRADA DE ...

Institución IPS
CLINICA UNIVERSITARIA COLOMBIA

Clasificación del Equipo*
Seleccione una opción

Fabricante
Seleccione una opción

Tipo Equipo
Seleccione una opción

Modelo
Seleccione una opción

Estado Traslado
Seleccione una opción

Tipo Consulta*
Seleccione una opción

Seleccionar estado*
(•) Todos ( ) Activo ( ) Inactivo

LIMPIAR BUSCAR

Crear Inventario Equipo

Para acceder a la funcionalidad debe verificar previamente que no se encuentre registrado en el sistema.

CREAR INVENTARIO

CCE: Cold Chain Equipment

Cold Chain Module - CCE Inventory Creation

Inicio > Cadena de frío > Equipos > Inventario > **Crear Inventario Equipo**

Inventario de Equipos

A continuación, usted podrá crear el inventario de los equipos de cadena de frío del PAI que hacen parte de su institución.

Crear Inventario Equipo

Los campos con asterisco (*) son obligatorios

Activo

Inventario del Equipo*

Refrigerador

Tipo*

Seleccione una opción

PQS *

¿Cuenta con regulador de voltaje? *

Seleccione una opción

Fecha de próximo mantenimiento *

Tipo de Adquisición*

Seleccione una opción

Modelo *

Ejemplo: TCW 2000 SDD

Volumen (Litros) *

Fecha de compra

Seleccionar estado*

Activo Inactivo

Fabricante*

Seleccione una opción

Serie *

Ejemplo: 000001

Sistema de monitoreo *

Seleccione una opción

Fecha de último mantenimiento

Cold chain equipment

All cold network equipment must be entered under the **option**

"Create inventory "

Only equipment in inventory can be associated with

quarantines

Each institution is **responsible** for keeping its cold chain inventory updated:

Creation and Maintenance

Cold Chain Module- Maintenance Records

All cold chain equipment must have an **updated maintenance report.**

Aplicación de Biológicos | Inventarios | Pedidos | Cadena de frío | Cohortes

Inicio > Cadena de frío > Equipos > Inventario > **Modificar Inventario Equipo**

Inventario de Equipos

A continuación, usted podrá modificar la información registrada en el inventario de los equipos de cadena de frío del PAI que hacen parte de su institución.

Inventario del equipo | **Registrar mantenimiento** | Historial mantenimiento

Fecha Último Mantenimiento: 20/12/2020

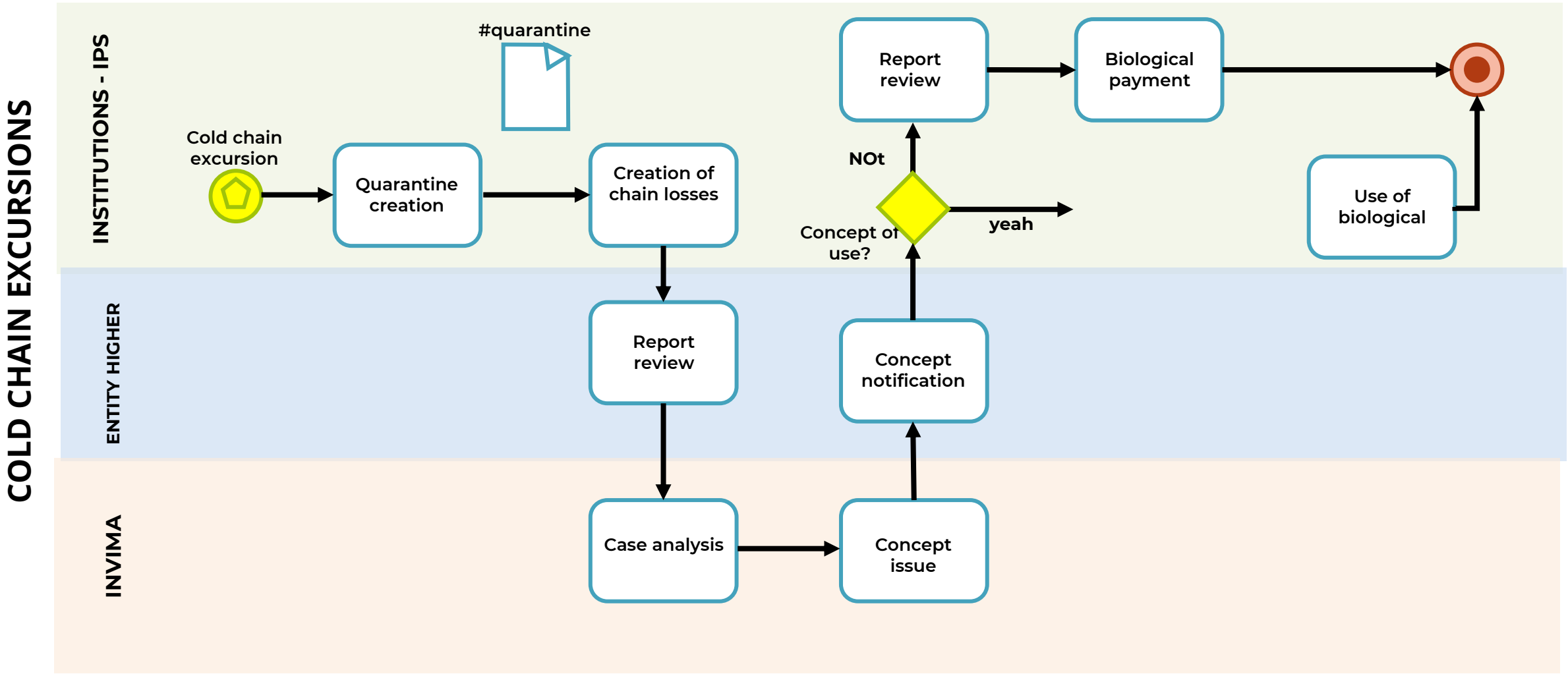
Fecha Próximo Mantenimiento: 20/12/2021

Observación

Equipo en funcionamiento

CANCELAR | REGISTRAR

Cold Chain Module – Temperature excursions



Thank You!

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Thank You!

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