

Public Health Measures in the Context of Covid-19 versus the International System of Radiation Protection

Round Table

What can Radiation Protection Learn from the COVID-19 Pandemic?

IAEA International Conference on Radiation Safety:

Improving Radiation Protection in Practice

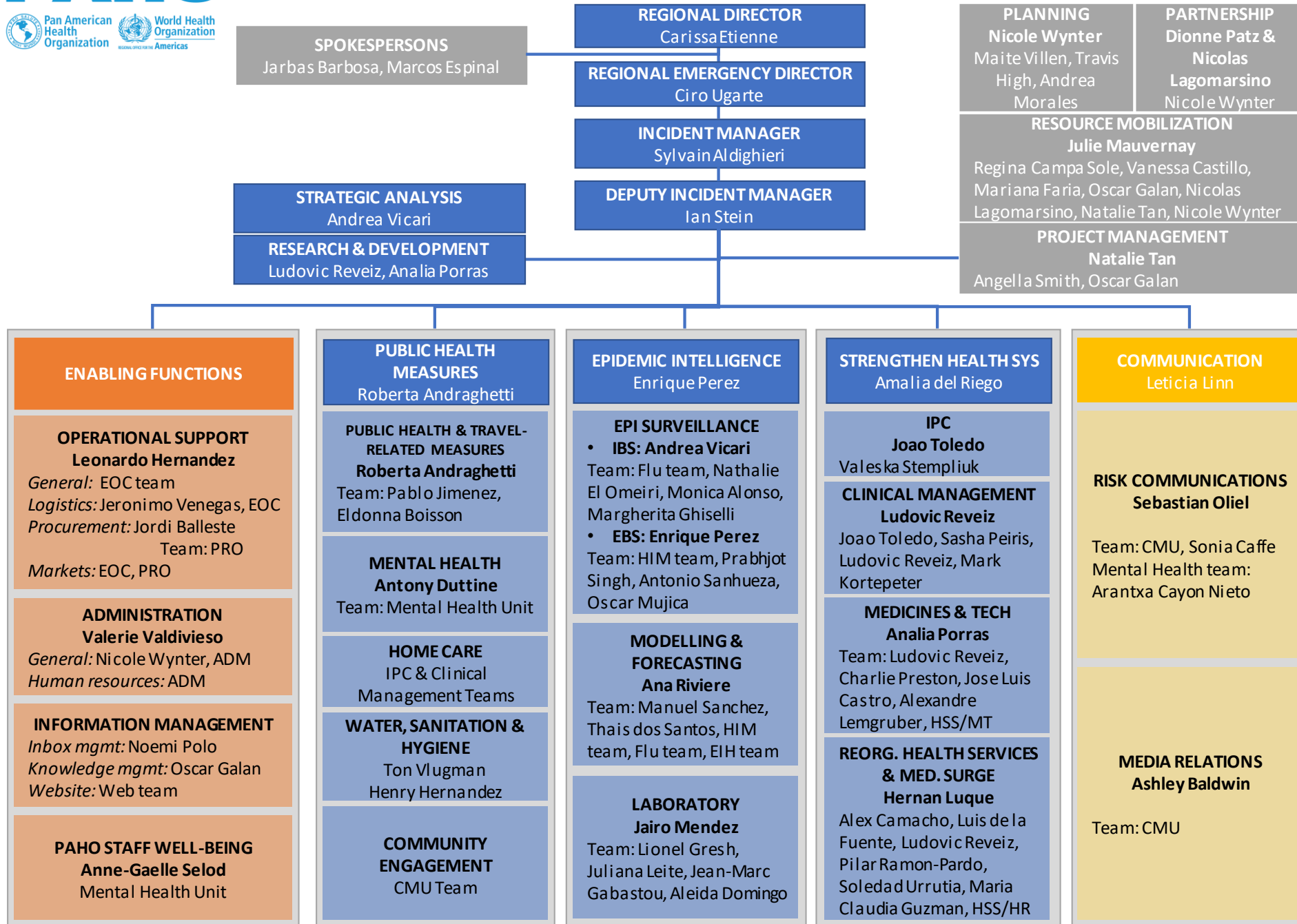
9- 20 November 2020

Pablo Jiménez

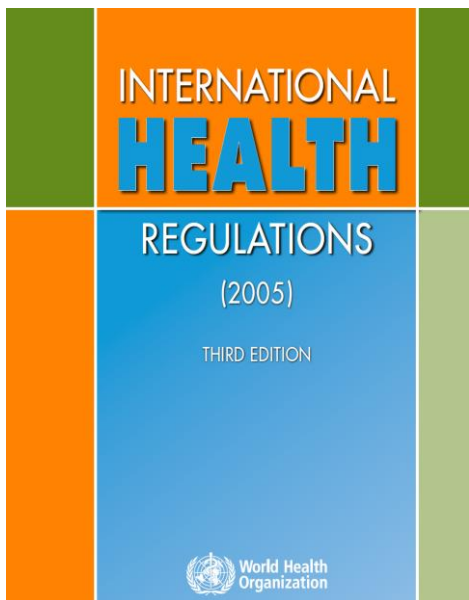
**Regional Advisor in Radiological Health and PAHO Incident Managing System
Team (IMST) to respond to the COVID - 19**



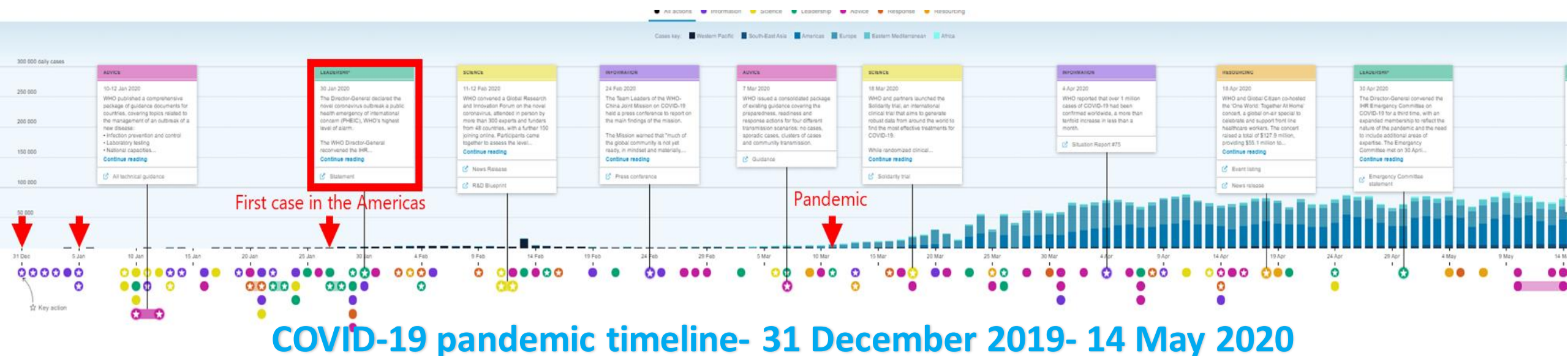
PAHO



THE INTERNATIONAL HEALTH REGULATIONS



- A binding instrument of **international law**, signed by **196 countries**. Entered into force on **15 June 2007**
- The IHR defines a **Public Health Emergency of International Concern (PHEIC)** as an extraordinary event that:
 - constitute a public health risk to other States through the international spread of disease, and
 - potentially require a coordinated international response
- A PHEIC was determined on **30 Jan 2020 in the case of COVID-19**



Concepts and “jargon” used in the International System of Radiation Protection



Effective dose
Reference Levels
Dose constraints
Clearance
Contamination
Intake
Radiation Risks...



- Three main **principles**
 - Justification
 - Optimization
 - Limitation
- Three **categories of exposure**
 - Public
 - Occupational
 - Medical
- Three **exposure situations**
 - Planned
 - Existing
 - Emergency

Concepts and jargon used by the public health “COVID-19 community”

- *Scenarios of transmission*
- *Mass gathering*
- *High-risk populations*
- *Inequities*
- *Vulnerable settings*
- *Public health services*
- *Surveillance*
- *Infection*
- *Laboratory diagnostic*
- *Health services capacity*
- *Health technologies...*



Non-pharmaceutical measures

- Personal protective measures
- Environmental measures
- Social distancing measures
 - Isolation of cases
 - Quarantine of contacts
- Measures related to international traffic

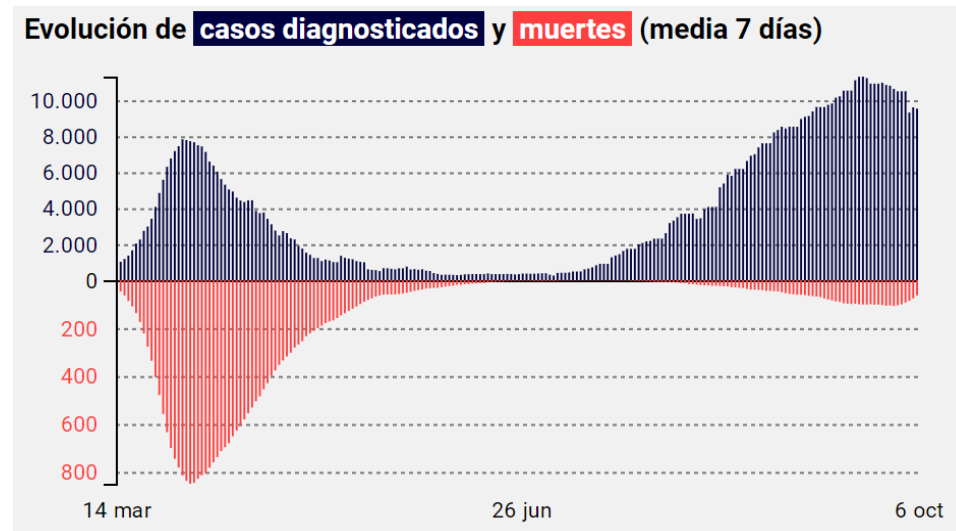
THE BASICS (I): FACTS AND THEORY

FACTS:

- ✓ Some people present **symptoms**
- ✓ Some of them need specialized **medical care**
- ✓ Some of them **die**...

THE OFFICIAL THEORY:

- There is a **virus** that cause those facts
- The virus has been **identified** as SARS-CoV-2 and can be **detected**
- The virus can be **transmitted** from person to person
- There is a **relation cause-effect**:
 - the more people detected with SARS-CoV-2 infection, the more need medical care, and the more die.



THE BASICS (II): THE HAZARD, SOURCE CONTROL AND DETECTION

- As in RP, **source control of the hazard** is the way to go:

- Detect cases: **ISOLATION**
- Identify contacts: **QUARANTINE**



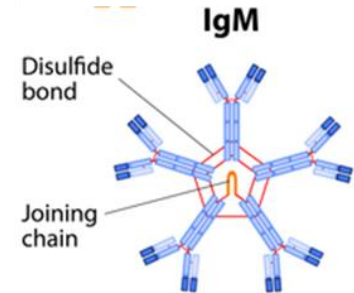
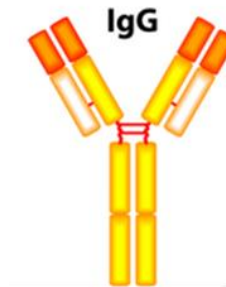
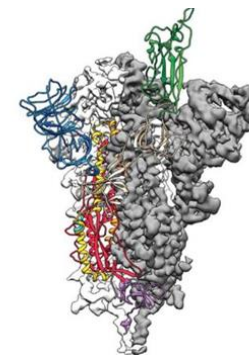
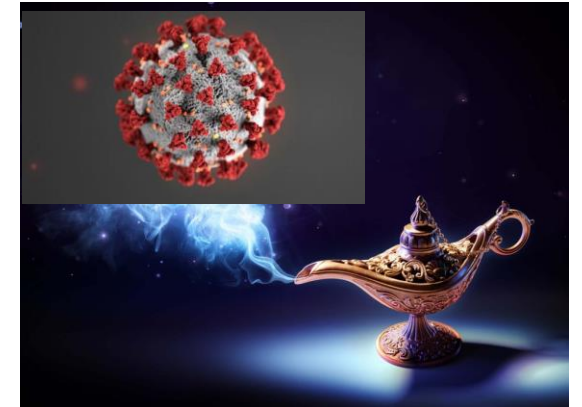
- The human body **cannot detect neither radiation nor the virus**

- The good news is that the **virus SARS-CoV-2** can be directly or indirectly detected by means of laboratory tests:

- PCR/ Molecular RNA
- Antigen/Proteins
- Serologic/Antibodies

- The bad news is that all detection methods have **biological and epidemiological limitations** (sensitivity and specificity), and **other aspects** (availability, costs, knowledge, time) that makes **impossible a 100% detection plan**.

Once the genie is out of the lamp...



THE BASICS (III): PROTECTION STRATEGIES

WAYS OF TRANSMISSION

- Virus SARS-CoV-2 **mainly spreads** between people through **direct, indirect** (through contaminated objects or surfaces), or **close contact** with infected people.
- **Airborne transmission** of the virus can occur where very small droplets called **aerosols** are generated.

✓ Distance:

- ❖ **Maintain distancing** to others. More than one meter away the concentration decreases rapidly.
- ❖ If contaminated objects or surfaces are **touched cleaning hands** is critical.

✓ Time:

- ❖ **Reduce the time** in adjacent proximity to others to the minimum necessary.

✓ Shielding:

- ❖ **Wear mask** when standing one meter or more away is not possible to protect others and yourself
- ❖ **Other barriers** may be useful in specific settings

TIME



DISTANCE



SHIELDING



© WHO

THE BASICS (IV): CATEGORIES OF EXPOSURE

As in RP, to protect different groups of people is useful to consider “categories”



Occupational

- Workplaces: low/medium/high risk
- Essential workers (e.g. health professionals)



Population at higher risk

- E.g. older than 60 years or who have health conditions like lung or heart disease, diabetes or conditions that affect their immune system.



Vulnerable population

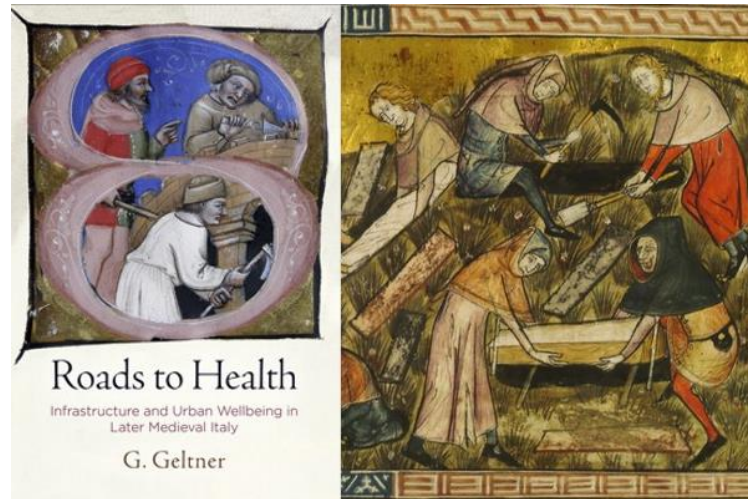
- E.g. racial/ethnic minorities, immigrants/refugees, those who are socioeconomically disadvantaged, disabled, underinsured, incarcerated, facing domestic violence, ...



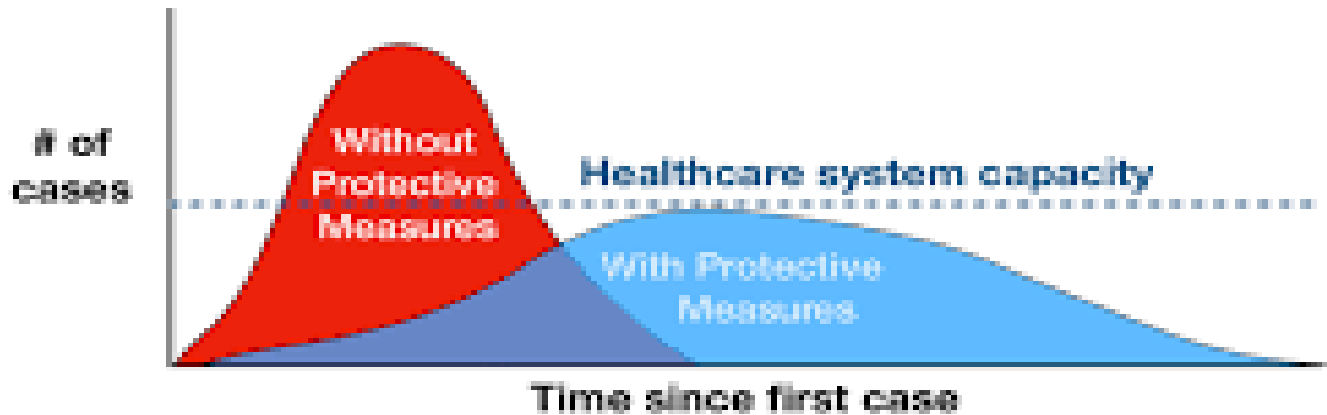
General Public

- all other exposures

THE BASICS (V): PUBLIC HEALTH MEASURES



Medieval public health measures



Adapted from CDC / The Economist

- **PURPOSE**: To slow transmission and flatten the epidemic curve:
 - ✓ Easing stress on health services
 - ✓ Buying time for specific pharmaceutical measures to become available (e.g., vaccine, efficacious treatments)

ACTIONS

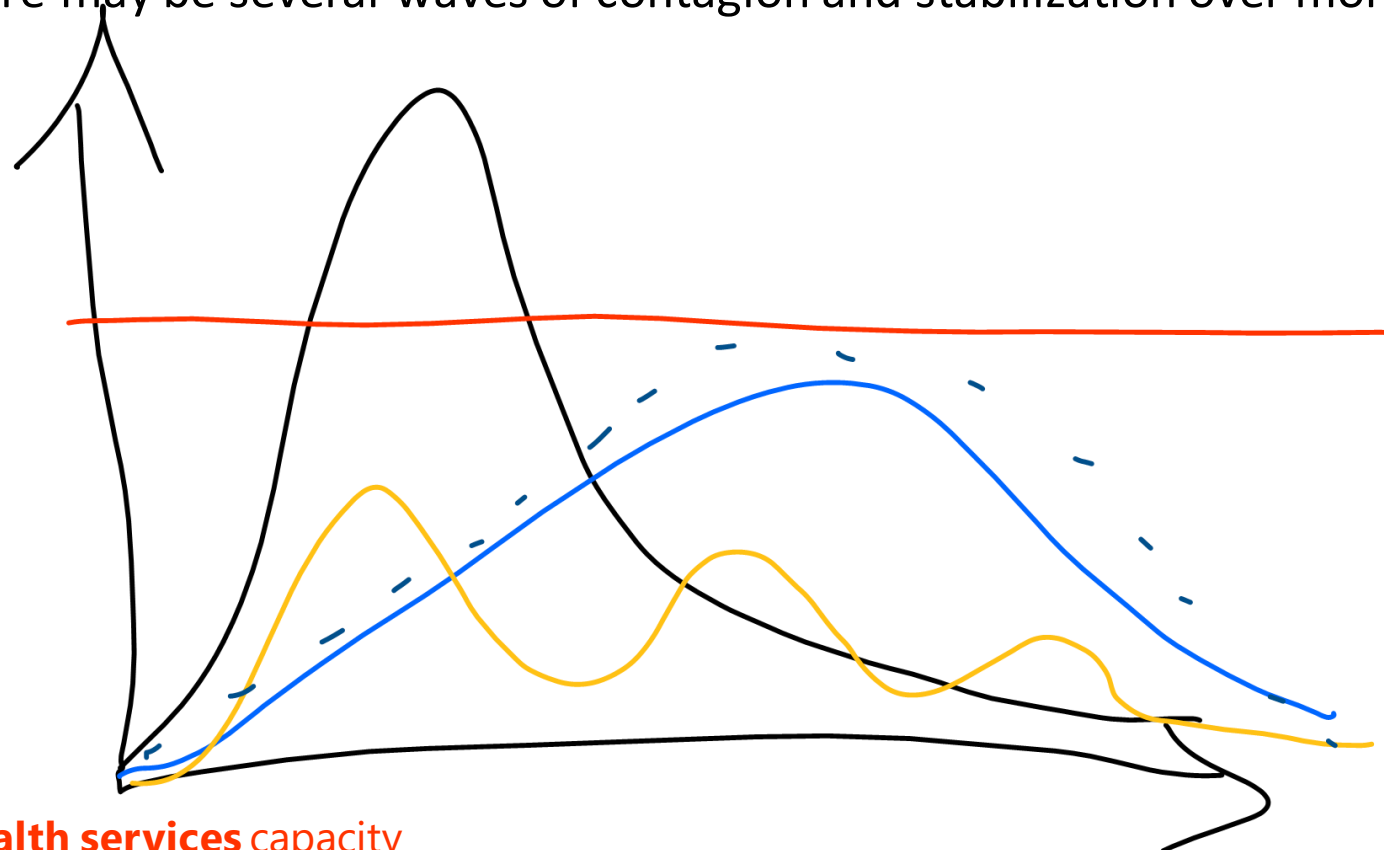
Proposed actions
depending on the **transmission scenarios** (*)

Actions	No cases	Sporadic cases	Clusters of cases	Community transmission
Early detection of cases	X	X	X	
Case isolation		X	X	X
Contact identification and quarantine*		X	X	(X)*
Limitation of crowding			X	X
Cancellation of mass gathering events			X	X
Educational facilities closure			X	X
Workplace closures			X	X
Business closures			X	X
Home confinement			X	X
Public transport restrictions			X	X
Specific actions for closed settings	X	X	X	X
International traffic restrictions		X	X	X

CURRENT SITUATION

NO EFFECTIVE TREATMENT, NO VACCINES, OR HERD IMMUNITY

- The public health measures may need to be taken gradually at different times, and there may be several waves of contagion and stabilization over months



- Level of **health services** capacity
- **No measures**
- **Strict measures** uniformly applied in time and space (national territory)
- **Less strict measures** uniformly applied in time and space (national territory)
- **Accordion:** More or less strict measures applied in an intermittent manner in time and space

RELATED PUBLICATIONS

CONSIDERATIONS ON SOCIAL DISTANCING AND TRAVEL RELATED MEASURES IN THE CONTEXT OF THE RESPONSE TO COVID-19 PANDEMIC

3 April 2020

Note redacted on 27 April 2020: This document was shared with the PAHO/WHO Country Offices in the Region of the Americas on 3 April 2020. Due to the editing and formatting process, omissions were detected and have now been amended (see text in red on pages 3, 4 and 14).

1 | CONTEXT

Non-pharmaceutical measures include personal protective measures, environmental measures, social distancing measures, and travel-related measures. These considerations elaborate upon the implementation of social distancing measures and travel related measures (hereafter referred to as “measures”) outlined in the WHO interim guidance documents *Critical preparedness, readiness and response actions for COVID-19*,¹ *Responding to community spread of COVID-19*,² and takes in to account the WHO document *Non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza*.³ At the time of this writing, countries and territories in the Region of the Americas are broadly experiencing the same transmission scenario.⁴

The considerations offered are subject to revision as the pandemic evolves and more information becomes available.

2 | DEFINITIONS

Public health measures ⁵	Actions or measures taken by individuals, institutions, communities, local or national governments, or international bodies to reduce the spread of COVID-19
Social distancing ⁶	Measures applied specific to social settings, or to the society in its entirety, to reduce the risk of acquiring or spreading COVID-19

¹ Critical preparedness, readiness and response actions for COVID-19, WHO, 22 March 2020, <https://apps.who.int/iris/rest/bitstreams/1272587/retrieve> [Accessed on 30 March 2020]

² Responding to community spread of COVID-19, WHO, 7 March 2020, <https://apps.who.int/iris/rest/bitstreams/1271589/retrieve> [Accessed on 30 March 2020]

³ Non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza, WHO, 2019, <https://apps.who.int/iris/bitstream/handle/10665/329438/9789241516839-eng.pdf?ua=1> [Accessed on 30 March 2020]

⁴ Transmission scenarios as described in <https://apps.who.int/iris/rest/bitstreams/1271993/retrieve> [Accessed on 30 March 2020]: 1. Countries with no cases (No Cases); 2. Countries with 1 or more cases, imported or locally detected (Sporadic Cases); 3. Countries experiencing cases clusters in time, geographic location, or common exposure (Clusters of cases); 4. Countries experiencing larger outbreaks of local transmission (Community transmission)

⁵ Internal WHO working definition

⁶ Internal WHO working definition

ADOPTION THE MEASURES
3 April 2020

CONSIDERATIONS ON THE ADJUSTMENTS OF SOCIAL DISTANCING AND TRAVEL-RELATED MEASURES IN THE CONTEXT OF THE RESPONSE TO COVID-19 PANDEMIC

24 April 2020

1 | PREAMBLE

As the COVID-19 pandemic evolves, this document was developed to complement the PAHO document *Considerations on social distancing and travel related measures in the context of the response to COVID-19 pandemic*, distributed to the PAHO/WHO Country Offices on 3 April 2020 and now available on the PAHO COVID-19 web page.¹ Similarly, it complements the two WHO documents enumerated below:

- *COVID-19 Strategy update*,² is setting the global strategic objectives for the response to the COVID-19 pandemic: (i) Whole of government and communities mobilization; (ii) Control of sporadic cases and clusters and prevention of community transmission by rapidly detecting, isolating, and treating cases; and by identifying, quarantining, and catering for the needs of their contacts; (iii) Suppression of community transmission through non-pharmaceutical measures;³ (iv) Reduction of mortality by providing appropriate clinical care to cases, ensuring the continuity of essential health and social services, and protecting frontline workers and vulnerable populations; (v) Development of safe and effective vaccines and therapeutics that can be delivered at scale and that are accessible based on needs.
- *Considerations in adjusting public health and social measures in the context of COVID-19*,⁴ is reiterating the four transmission scenarios characterizing the pandemic so far,⁵ and it is anticipating that, based on current evidence, the most plausible epidemiological evolution of the pandemic that may be observed in the coming months might involve recurring epidemic waves interspersed with periods of low-level transmission, also including different transmission scenarios simultaneously occurring in non-contiguous areas within the same country. Therefore, especially in the current absence of both, safe and effective specific treatment and vaccine, the implementation of social distancing and travel-related measures (hereafter also referred to as “measures”) might require adjustments, in either direction (either tightening or lessening them), taking into account the following: (i) The epidemiology, and, in particular, the rate of spread of SARS-CoV-2 virus, causing

¹ Considerations on social distancing and travel related measures in the context of the response to COVID-19 pandemic, PAHO, 3 April 2020, <https://www.paho.org/en/documents/considerations-social-distancing-and-travel-related-measures> [Accessed on 20 April 2020]

² COVID-19 Strategy update, WHO, 14 April 2020, https://www.who.int/docs/default-source/coronavirus/covid-strategy-update-14april2020.pdf?sfvrsn=29da3ba0_6 [Accessed on 20 April 2020]

³ Non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza, WHO, 2019, <https://apps.who.int/iris/bitstream/handle/10665/329438/9789241516839-eng.pdf?ua=1> [Accessed on 20 April 2020]

⁴ Considerations in adjusting public health and social measures in the context of COVID-19, https://apps.who.int/iris/bitstream/handle/10665/331773/WHO-2019-nCoV-Adjusting_PH_measures-2020-1-eng.pdf [Accessed on 20 April 2020]

⁵ Critical preparedness, readiness and response actions for COVID-19, WHO, 22 March 2020, <https://apps.who.int/iris/rest/bitstreams/1272587/retrieve> [Accessed on 20 April 2020]. Transmission scenarios: 1. Countries with no cases (No Cases); 2. Countries with 1 or more cases, imported or locally detected (Sporadic Cases); 3. Countries experiencing cases clusters in time, geographic location, or common exposure (Clusters of cases); 4. Countries experiencing larger outbreaks of local transmission (Community transmission)

ADJUSTING THE MEASURES
24 April 2020

Resuming non-essential international travel in the context of the COVID-19 pandemic – Advice on the use of COVID-19-related testing

5 October 2020

Summary: This document was developed by the Pan American Sanitary Bureau in compliance with Resolution “COVID-19 pandemic in the region of the Americas”, adopted by the 58th PAHO Directing Council, 2020.

The document summarizes considerations for the decision-making process for resuming non-essential international travel in the context of the COVID-19 pandemic and key actions for accepting and mitigating the risk of SARS-CoV-2 virus international spread which cannot be eliminated. It expands on the potential use of COVID-19-related testing, highlighting primary biological, technical, and epidemiological challenges, as well as secondary constraints of a legal, operational, and resources-related nature.

Key recommended actions

- Individuals under isolation, quarantine, and community-wide movement restrictions (e.g. lockdown) should not be allowed to undertake international travel.
- Sick individuals should be discouraged from undertaking any international travel, and health care-seeking behaviour should be promoted.
- Countries/territories from which authorizing direct incoming international traffic can be dynamically selected as a tool to mitigate the risk of SARS-CoV-2 virus importation;
- Mechanisms should be in place to collect information about arriving travellers’ prospective travel plans for the first 14 days of their stay;
- Points of entry should have visual screening, of both outgoing and incoming travellers, for symptoms compatible with COVID-19;
- Mechanisms should be in place to monitor the health status of incoming international travellers for the first 14 days upon arrival at their destination.

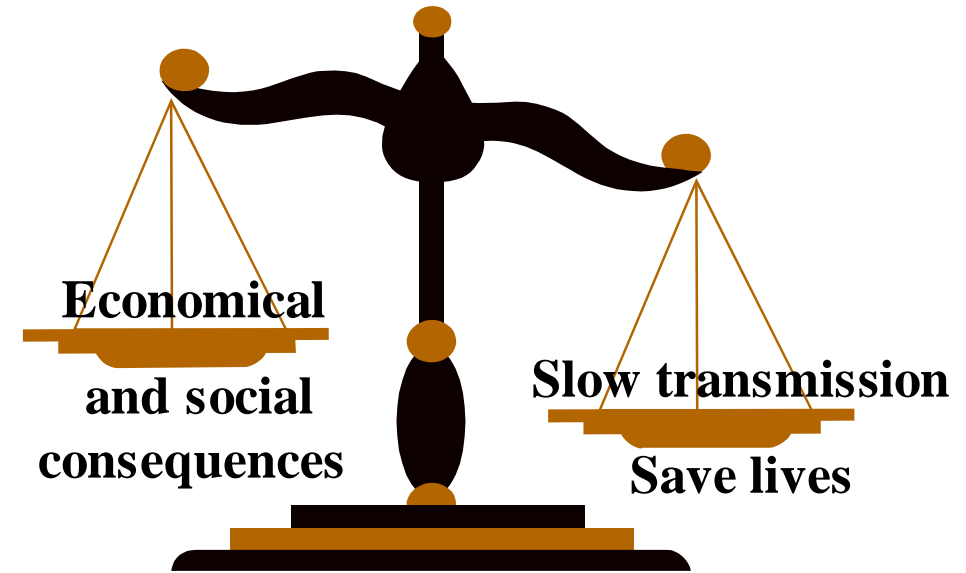
Actions NOT recommended

- International travellers should not be regarded and managed as contacts of COVID-19 cases and, hence, not be subjected to quarantine measures in the destination country;
 - International travellers should not be regarded and managed as suspect COVID-19 cases and, hence, not be subjected to sampling and isolation in the destination country;
- Interventions which might generate a false sense of security – body temperature screening, completion by the traveller of forms/declarations focused on symptoms, COVID-19-related testing – are not warranted.
- Conducting or requiring COVID-19-related testing of prospective or incoming international travellers as a tool to mitigate the risk of international spread is not supported by current available testing technology and test performance.

NON- ESSENTIAL INTERNATIONAL TRAVEL
5 October 2020

THE BASICS (VI): PRINCIPLES

- ✓ **Justification:** to ensure **a net benefit** of the public health measures
- ✓ **Optimization:** to obtain the **maximum net benefit** of the public health measures
- ✓ **Limitation:** to ensure health services capacities, and in particular ICU capacities, remain **below saturation**



The main conclusion of this report is that **if the pandemic transmission curve is not brought under control, the countries' economies will be unable to recover.**



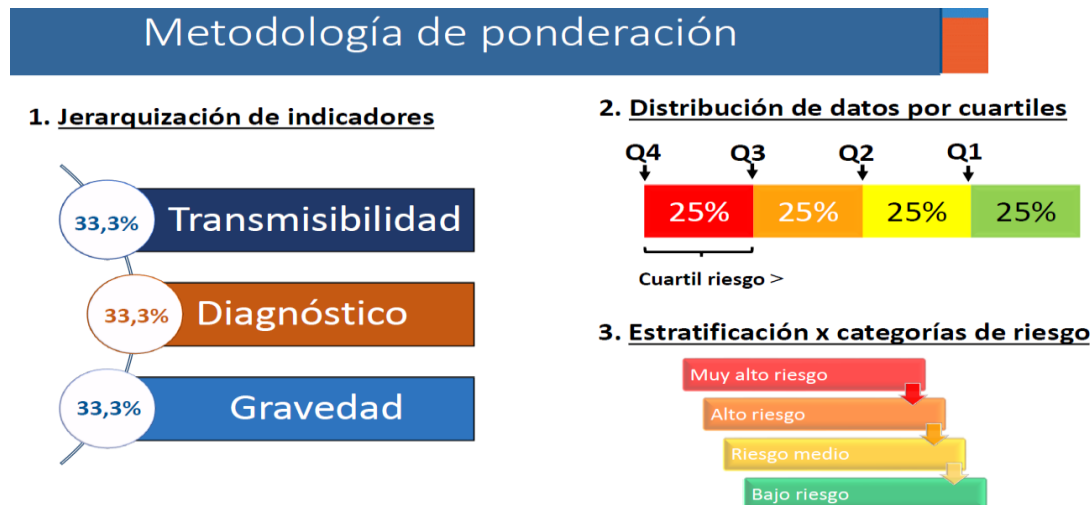
30 July 2020

Health and the economy: a convergence needed to address COVID-19 and retake the path of sustainable development in Latin America and the Caribbean



RISK ASSESSMENT

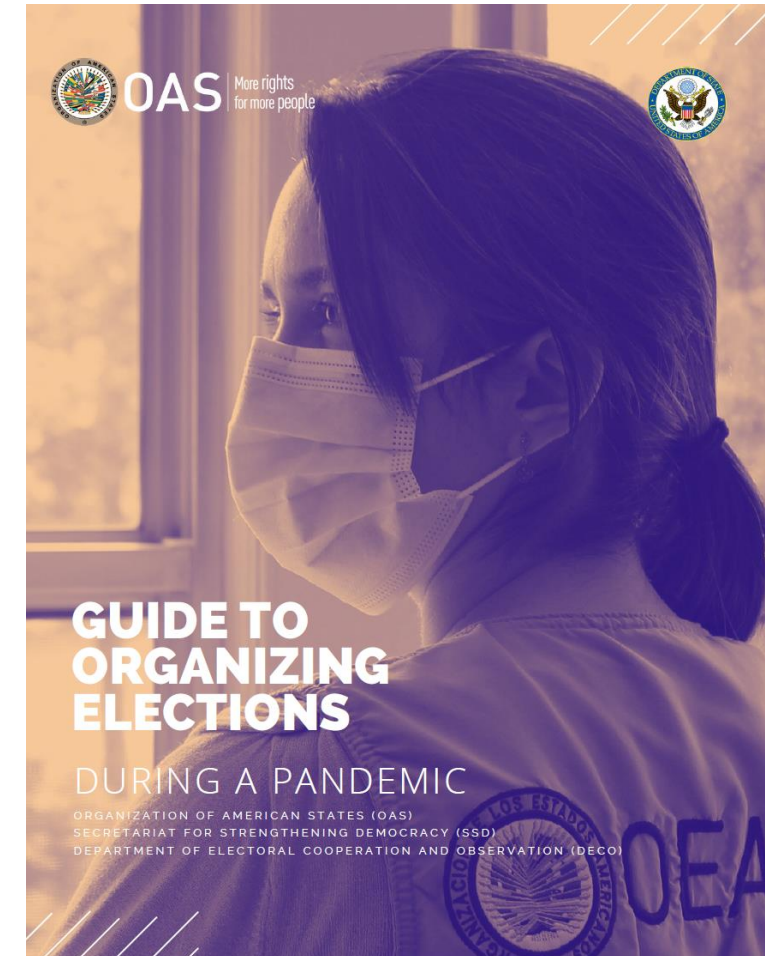
- Unlike in radiation protection, there are **not risk coefficients available for COVID-19**.
- **Still many uncertainties due to new virus and waiting as science responds.**
- Countries have established “**traffic light systems**” to assess risk, based on quantitative and qualitative indicators, usually involving:
 - ✓ **Transmission:** national/subnational scenario classification, rate of cases detected, reproductive number.
 - ✓ **Health services situation:** Rate of hospitalization or percentage of ICU occupancy
 - ✓ **Mortality:** Case fatality ratio (CFR) or infection fatality ratio (IFR) estimations



Traffic light system in Colombia

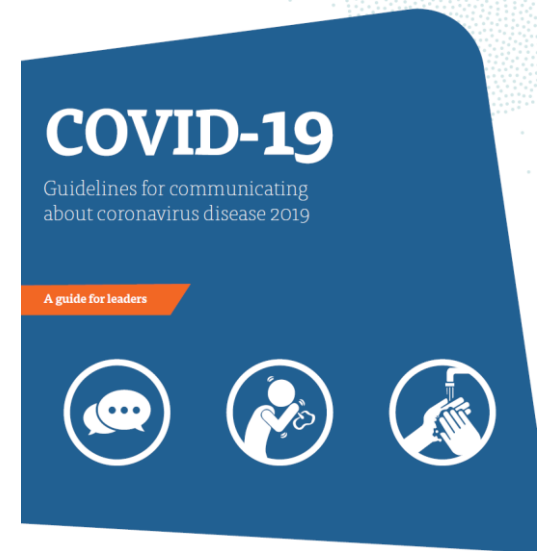
RISK MANAGEMENT

- As in RP, **there is not zero risk**, so certain level of risk needs to be accepted and minimized
- **All sectors are affected, and all are interested parties**
- Public health measures have been developed and adopted by the authorities for **workplaces, schools, travel, religious services, mass gathering events, electoral process**, etc.
- Authorities have **based the decisions and adoption** on:
 - related PAHO/WHO guidelines/advise and/or
 - local situation and/or
 - pressure from the different affected sectors.
- The main tools to **minimize risks** are:
 1. Source control
 2. The protection strategies
 3. The adoption of public health measures

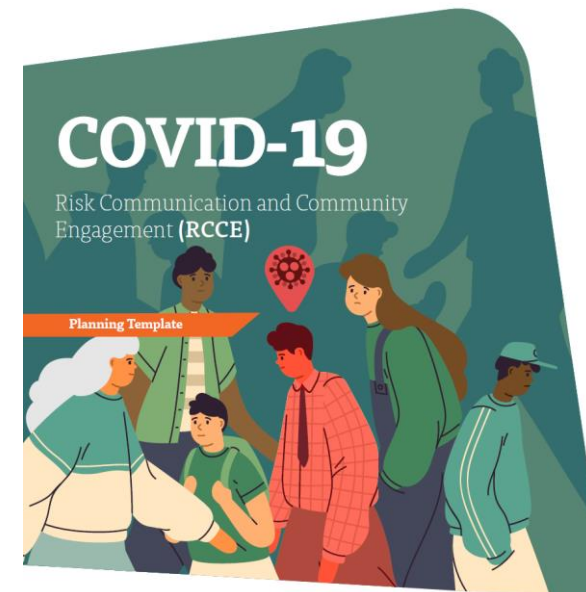


RISK COMMUNICATION

- The main purpose is to **convince the population** in order to obtain its **collaboration**. . . .
- Communication guidelines need to be developed **for leaders** and **for the community**
- The risk communication plans **need to be adapted to the local context, reviewed frequently, and updated as needed.**
- The main challenge is the **“denials”**:
 - Political leaders and authorities sending wrong messages or openly against the “official theory”
 - Conspiracy theory supporters
 - Believers on explanations such as “divine destiny”, “mother earth revenge”, etc. who think any effort is worthless



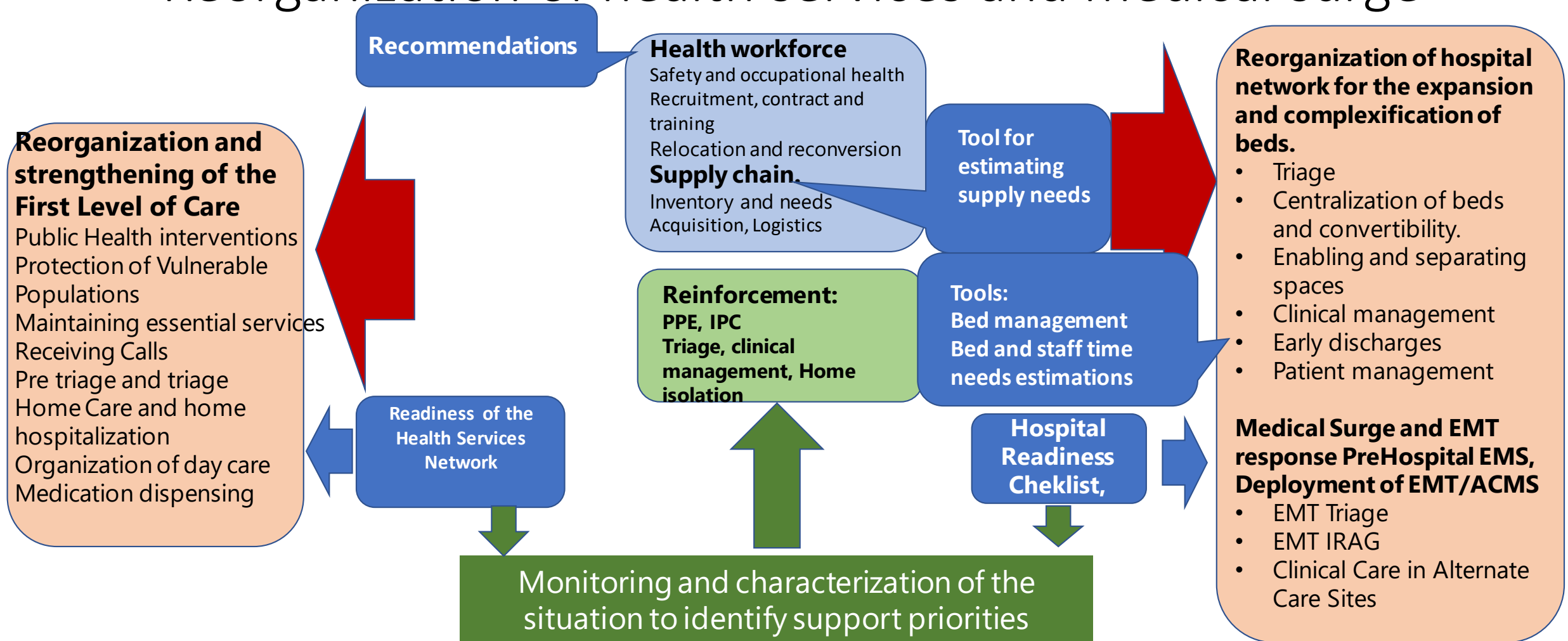
PAHO Pan American Health Organization World Health Organization



PAHO Pan American Health Organization World Health Organization

MEDICAL RESPONSE:

Reorganization of health services and medical surge



CONSIDER THE BARRIERS

Groups of people who **cannot implement the public health measures** for different reasons, and who **deserve special approaches**, such as:



- **Poor conditions of habitability:** e.g. favelas, prisons
- Lack of **income / employment/social protection**
- Lack of **access to and continuity of health care**
- Lack of **basic services and supplies** such as food, water...
- Gender inequality and **burden of care for one gender**
- **Communication barriers:** communication for disability, understanding of official language, etc.
- **Cultural aspects:** collision with community and ancestral values, traditions, symbols, beliefs and modes of behavior

Courtesy PAHO Colombia

MANY THANKS



Contact Information

jimenezp@paho.org

www.paho.org/radiologicalhealth

Pan American Health Organization

Regional Office of the World Health Organization for the Americas

525 Twenty-third Street, N.W.

Washington, D.C. 20037, USA

Phone.: +1 (202) 974-3000