

# Immunization throughout the life course

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# Context in the Americas

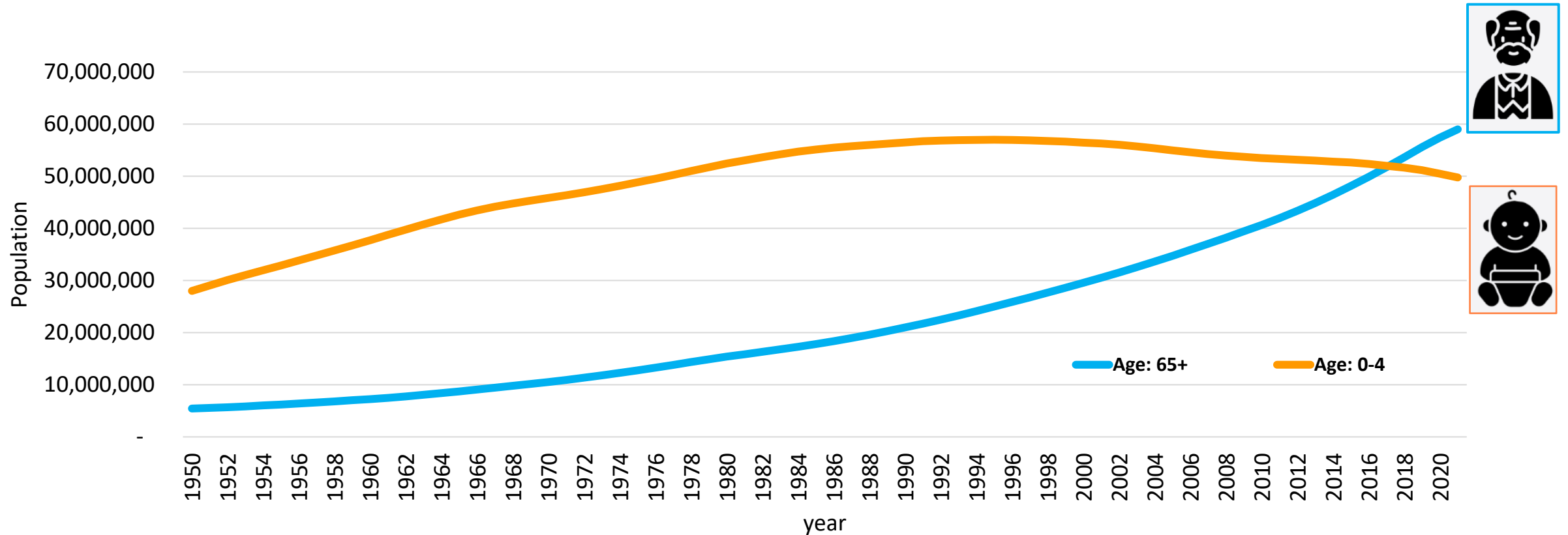
Life expectancy in the world has increased by 20 years in half a century.

For the first time, there are more adults  $\geq 65$  years old than children  $< 5$  years old.

Although life expectancy has increased, healthy life expectancy has not yet seen the same progress.

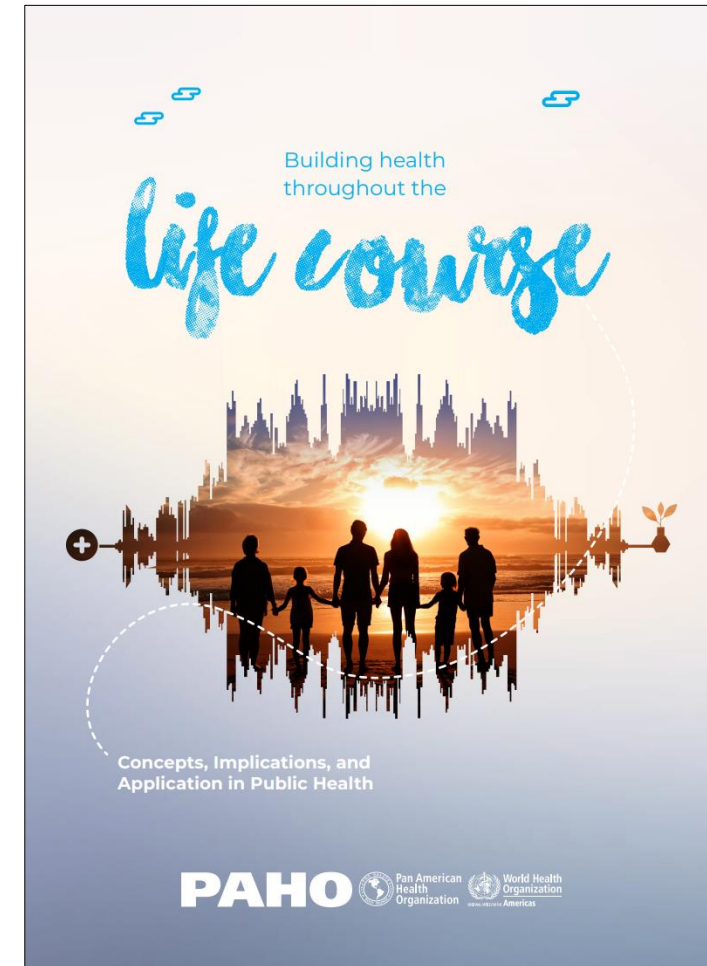
A quarter of those who live over 80 years will live in poor health.

# Distribution of the population by age groups in Latin America and the Caribbean, 1950-2021



# Focus on the life cycle

- A life course approach explores the **dynamic relationship** between prior health interventions (e.g., diseases, behaviors, environmental factors) and the positive or negative influences that shape human trajectories and impact the health of individuals and of the population.
- This approach allows us to understand how social inequities in health are perpetuated and transmitted, and how their negative effects can be mitigated across generations.



# Immunization across the life course

In **1974** , the Expanded Program on Immunization (EPI) was created to reduce infant mortality rates globally.

In **2024** , the life course approach to immunization states that people should receive all recommended doses of vaccines throughout their lives to obtain maximum prevention benefits from vaccine-preventable diseases at different ages, between generations and in their communities.

# Immunization across the life course

The approach considers immunization programs to be **public health interventions** that can optimize health and can be adjusted to different stages of life to:

1. Promote immune fitness: maintain the capacity of the immune system to generate appropriate responses.
2. Minimize the impact of immunosenescence and facilitate healthy aging.
3. Protect others who cannot be vaccinated.
4. Minimize the burden of disease, including severe or chronic medical conditions, and mortality.

# 1. Promote immune fitness

## Immunological aptitude:

- Every infection, vaccination or environmental exposure **increases the resistance** of the innate and adaptive immune systems.
- Timely immunization trains the **plasticity** and **resilience** of the immune system to act efficiently, even when it begins to weaken.

## The life cycle approach recognizes that:

- Vaccination schedules are **designed** to ensure vaccine protection in sensitive/critical periods, when there are gaps in immunity.
- Strategies to reduce missed vaccination opportunities should be adapted according to age group.

### Example :

The BCG vaccine is given in the first 24 hours of life to protect babies against tuberculosis while their first immune cells develop fully.



#CadaVacunaCuenta

## El Salvador

Vacúnate en diferentes etapas de la vida para prevenir las siguientes enfermedades:

# PONTE AL DÍA

La tabla abajo muestra las enfermedades que se pueden prevenir a cada edad a través de la vacunación en tu país.

Si crees que tú o tus seres queridos no han recibido todas sus vacunas, ¡pueden ponerse al día!



### Embarazo

Influenza  
Difteria  
Tétanos  
Tos ferina  
COVID-19



### Recién nacidos

Hepatitis B  
Tuberculosis



### Primeros 11 meses

Difteria  
Tétanos  
Tos ferina  
Polio  
Enfermedad por Hib  
Hepatitis B  
Influenza  
Enfermedad por rotavirus  
Enfermedad neumocócica



### Segundo año (12-23 meses)

Sarampión  
Rubéola  
Paperas  
Difteria  
Tétanos  
Tos ferina  
Polio  
Enfermedad por Hib  
Hepatitis B  
Enfermedad neumocócica  
Varicela  
Hepatitis A



### Niñez

Difteria  
Tétanos  
Tos ferina  
Polio  
COVID-19



### Adolescencia

Difteria  
Tétanos  
Infección por VPH  
COVID-19



### Adultos

COVID-19



### Personal de salud

Hepatitis B  
Influenza  
COVID-19



### Personas mayores

Influenza  
COVID-19



## 2. Minimize the impact of immunosenescence

### Biological changes while aging:

- They influence the immunological capacity of individuals to detect and differentiate pathogens (**immunosenescence**).
- They exacerbate the interaction between chronic diseases and a greater presence of pro-inflammatory cells.

### The life course approach recognizes that vaccines:

- Reduce immune vulnerability that occurs with aging.
- Help prevent the development of chronic diseases.
- Provide additional protection through booster doses at times when antibodies have decreased.

### Example :

When you recover from tetanus, you have no natural immunity and can contract it again. Periodic boosters are necessary to maintain an optimal level of immunity .



# 3. Protect others who cannot be vaccinated

## Vaccines are designed to protect:

- Directly, those who are most susceptible.
- Indirectly, those who are unvaccinated and come in contact with vaccinated persons.
- Maternal vaccination transmits antibodies from a mother to her baby when the child's immune system is still developing.

## The life course approach recognizes that:

- Maternal immunization and child health should be seen as a **continuous process**, where one intervention has a positive impact on the immune capacity of two people.



### Example :

The Tdap vaccine given during pregnancy prevents whooping cough in babies:

- Illness (69%–91%)
- Hospitalization (91%-94%)
- Death (95%)

# 4. Minimize the burden of disease and death in the community

The target population of each vaccine is made up of people who have a **higher risk of hospitalization and death** from the disease, compared to the general population.

**The life course approach recognizes that:**

- It is cost-effective to vaccinate high-risk individuals because it reduces:
  - The morbidity and mortality rate of this group.
  - The burden of disease in the community.
  - The healthcare costs associated with treating serious cases of this disease and its secuelas.

Example:

The prioritization of COVID-19 vaccines for high-risk populations – both during the pandemic and in the post-pandemic period – drastically reduced the hospitalization and mortality rates in all countries.



# Considerations for the national immunization programs

## Advocacy

- Promote vaccination as an essential good for all people.
- Increase awareness of each individual's vaccination status beyond childhood.
- Establish expert groups to strengthen and expand vaccination programs at every stage of life.

## Financing

- Demonstrate the economic and social benefit of immunization at each stage of life.
- Ensure that the national immunization program has sufficient resources to ensure the availability of vaccines for each age group.

## Health services

- Offer vaccination services in conjunction with other essential community and health services, depending on the age group and risk level of the individual.

# Considerations for the national immunization programs

## Demand generation

- Increase acceptance and demand for vaccines in all age groups.
- Train healthcare providers on the benefits of immunization across the life course, including advantages beyond protection against specific pathogens.

## Information

- Identify immunity gaps in each age group.
- Improve the recording and monitoring of longitudinal data.

# Immunization examples – ADOLESCENTS

- Develop an annual budget to include vaccine doses and materials for 100% of the adolescents residing in the catchment area. Include:
  - Official and unofficial residents
  - Public or private schools
  - No schooling
- Provide resources to implement vaccination and catch-up services for all adolescents at the beginning of primary and secondary school.
- Ensure the participation of adolescents in the development of all communication materials.



# Immunization examples – PREGNANT WOMEN

- Prioritize vaccination for women at very high risk of infection due to their comorbidities and/or living conditions.
- Offer vaccine doses to all pregnant women during prenatal visits, postnatal checkups, or well-baby visits.
- Offer training/refresher sessions for vaccinators working in settings that care for pregnant women and their children (e.g., community centers, pharmacies, schools).





# Immunization examples – OLDER ADULTS

- Provide access to vaccines and other essential health services for this age group (e.g., distribution of hygiene kits; health counseling) in a convenient setting.
- Offer vaccination to older people once they access healthcare services in hospitals, rehabilitation centers and long-term residential homes.
- Monitor the emergence of vaccine-preventable disease outbreaks in long-term healthcare settings and estimate their impact on the health of older patients.





# Immunization examples – HEALTHCARE WORKERS

- Review requirements for vaccination of healthcare workers based on the level of risk of their occupational exposure (e.g., intensive care unit vs. neonatal ward vs. general medicine vs. emergency response).
- Develop standard operating procedures to deploy vaccination during health emergencies.
- Promote the participation of health workers as advocates of vaccines and vaccination services.



TECHNICAL DOCUMENT

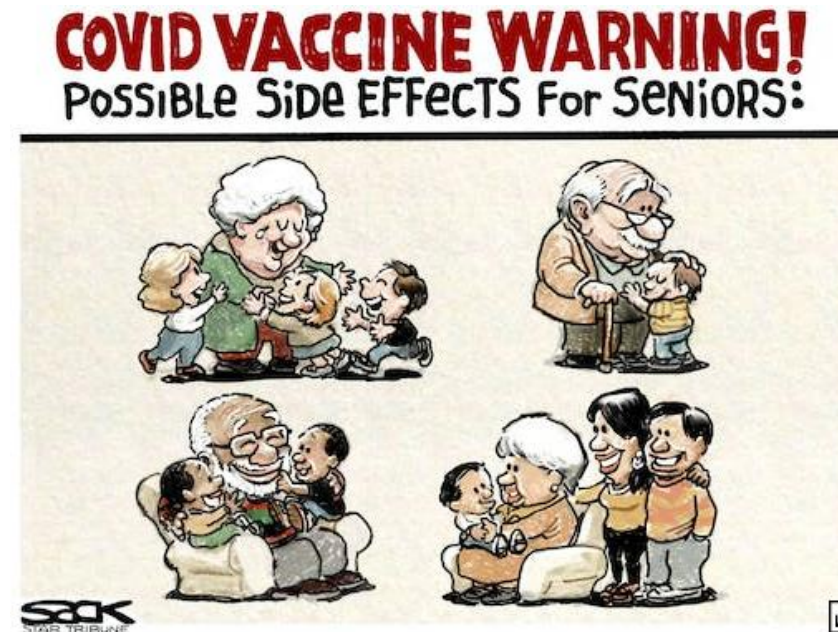
# Building better immunity

A life course approach to healthy longevity



# Key messages

- Ministries of Health should consider vaccination services as a public health intervention that can be **adjusted** to close the immune gaps of each age group.
- The extension of vaccination services to all age groups (including the administration of booster and catch-up doses) and at critical stages of life can be implemented through a careful review of the different elements of the national immunization program.
- When administered at the right time, in a focused manner, and in conjunction with other services, the health benefits of vaccination beyond protection against a pathogen can be **maximized**.







**Thank you**