



Considering the increase of respiratory viruses activity at pre-pandemic levels, and associated hospitalizations predominantly among children under 2 years old age, in the Andean sub region and Southern cone, the Pan American Health Organization / World Health Organization (PAHO/WHO) recommends Member States to strengthen and integrate surveillance for influenza, respiratory syncytial virus (RSV) and SARS-CoV-2 and to adopt the necessary measures for prevention and control of severe outcomes, including the ensuring of high vaccination coverage in at high-risk groups, appropriate clinical management, suitable organization of health care services, strict compliance with infection prevention control measures, adequate supplies of antivirals, and timely treatment of associated complications.

Situation summary

Following is a summary of the influenza situation by sub-regions in the Region of the Americas¹. The status of the Southern subregion, which presents an earlier increase in seasonal influenza and increase RSV activity, is reported first, followed by the Andean and Central America sub-regions, where influenza activity has remained at low levels and RSV increased. Country information is summarized in alphabetical order after the subregional overview. The situation for the other subregions with expected activity is then presented in alphabetical order. More detailed information on influenza and other respiratory viruses can be obtained from the PAHO/WHO Regional Influenza Update, published weekly on the PAHO/WHO website at: <https://www.paho.org/en/influenza-situation-report>.

In the **Southern sub-region**², influenza activity has shown a marked increase with high circulation levels. Influenza A viruses have predominated during the last four epidemiological weeks (EW), mostly A(H1N1)pdm09, with less circulation of influenza B/Victoria. Respiratory Syncytial Virus (RSV) activity has shown a pronounced rise and is currently at medium levels of circulation in the past EW. SARS-CoV-2 activity has remained at low levels.

After reaching high levels, severe acute respiratory infections (SARI) activity measured by hospitalizations remains high in some countries, especially related with RSV among the less than 2 years of age children.

In **Argentina**, SARI activity was at baseline levels and influenza activity increased slightly earlier this season during EW17. Influenza A (subtype undetermined) was more frequently detected. RSV activity remained at higher levels than the previous years: comparing the periods from January to May from the last 7 years, RSV cases in 2023 are 56% higher than the year with the highest number of cases for the same period (2019)³.

¹ The information presented in this update is from the data reported by Ministries of Health, National Influenza Centers (NICs) of Member States via PAHO/WHO platforms (i.e., FluNet and FluID), information from weekly reports, and bulletins published online by Ministries of Health or shared directly with PAHO/WHO.

² Argentina, Brazil, Chile, Paraguay, and Uruguay.

³ Ministry of Health of Argentina. Press release. 1 June 2023. Available in Spanish in: <https://bit.ly/3lZvpie>

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In **Brazil**, as of EW 19 of 2023, SARI activity was at epidemic levels, while influenza activity was above the seasonal average at low-intensity levels, with influenza B predominance followed by influenza A(H1N1)pdm09. RSV activity remaining at high levels. Since April, there has been a significant growth in new weekly cases and hospitalizations due to RSV in children mainly aged 2 years or younger⁴.

In **Chile**, SARI activity measured by the number of SARI cases/100 hospitalizations and intensive care unit (ICU) admissions, increased remaining at low-intensity levels compared to previous seasons, attributed to RSV and influenza. The influenza season presented earlier at moderate-intensity levels, with predominance of influenza A(H1N1)pdm09. RSV activity started earlier since EW 10. RSV cases from EW 1 to 21 of 2023 are 122% higher compared to the same period of 2022⁵.

In **Paraguay**, as of EW 19 of 2023, SARI cases per 100 hospitalizations were above the seasonal average at low-intensity levels, mostly related to RSV and SARS-CoV-2. Influenza activity increased below the seasonal average, with influenza A(H1N1)pdm09 predominance.

In **Uruguay**, in EW 19 of 2023, SARI activity measured by cases per 100 hospitalizations, was at low levels and related to SARS-CoV-2 and RSV. Influenza activity was below the seasonal average, with influenza A(H1N1)pdm09 more frequently detected. RSV activity increased at lower levels compared to previous seasons.

In the **Andean sub-region**⁶, as of EW 19 of 2023, influenza activity has shown increased detections with stable low levels of positivity. During the last 4 EW, influenza A(H1N1)pdm09 predominated, followed by influenza B (Victoria). RSV activity has increased and remained at medium levels of circulation, while SARS-CoV-2 circulated at moderate levels. SARI activity has remained consistently high, with influenza accounting for over half of the cases, and among the 20-to-59 years of age group followed by RSV among the less than 5 years of age group.

SARI activity and influenza circulation remained at baseline levels overall with influenza A(H1N1pdm09) predominance. However, in **Bolivia**, SARI activity per 100 hospitalizations increased above the seasonal average with most of the cases among children under five. Influenza activity increased above the seasonal average at low-intensity levels with influenza A(H1N1)pdm09. In addition, SARS-CoV-2 remained elevated in **Bolivia** and decreased in **Peru** and **Venezuela**, while RSV activity continued to increase at baseline levels.

In the **Central American sub-region**⁷, influenza activity has shown medium circulation levels and increased in the last EW. Over the previous four EWs, the predominant influenza viruses have been A, mostly A(H1N1)pdm09, with co-circulation of influenza B/Victoria. RSV activity has remained low. SARS-CoV-2 activity remained low and decreased in recent weeks. SARI and ILI activity were low, predominantly among the less than 5 years of age group, and mainly linked to SARS-CoV-2.

⁴ Fiocruz news agency. Brazil. 1 June 2023. Available in Portuguese in: <https://bit.ly/3qycLHT>

⁵ Ministry of Health of Chile. Respiratory Virus Circulation. 30 May 2023. Report. Available in Spanish in: <https://bit.ly/3oXbBVY>

⁶ Bolivia (Plurinational State of), Colombia, Ecuador, Peru, and Venezuela (Bolivarian Republic of).

⁷ Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

While SARI and influenza activity remained at moderate levels overall in the subregion, **Panama** reported increased influenza activity with predominance of influenza A(H1N1)pdm09. Moderate SARS-CoV-2 percent positivity was reported in **Panama**, **Guatemala** and **Honduras** in recent weeks with low detections overall.

In the **Caribbean sub-region**⁸, influenza activity rose to medium activity levels. During the last 4 EWs, B/Victoria predominated followed by influenza A(H1N1)pdm09. RSV activity increased at low levels. SARS-CoV-2 activity has increased in the past 3 EWs circulating at moderate levels. SARI activity has shown a decreasing trend, with most cases related to influenza, and ILI activity has remained at low levels. SARI activity was low overall as of EW 19, 2023. While influenza activity remained low across the subregion, and increase was reported in **Haiti** and **Belize**. SARS-CoV-2 activity was elevated in **Saint Lucia** and **Barbados**.

In **the Northern sub-region**⁹, as of EW 19, 2023, Influenza activity has remained at low levels. During the last 4 EWs, the predominant influenza viruses have been B/Victoria, with also circulation of influenza A (mostly A(H1N1)pdm09) to a lesser extent. RSV activity has remained at low levels overall. SARS-CoV-2 activity has decreased; however, it continues circulating at high levels. SARI and ILI cases showed a decreasing trend, most cases due to SARS-CoV-2.

In **Canada**, SARI activity in the young population, measured by pediatric hospitalizations (≤ 16 years), was below the seasonal average. Influenza activity was at baseline levels with predominance of influenza B (lineage undetermined).

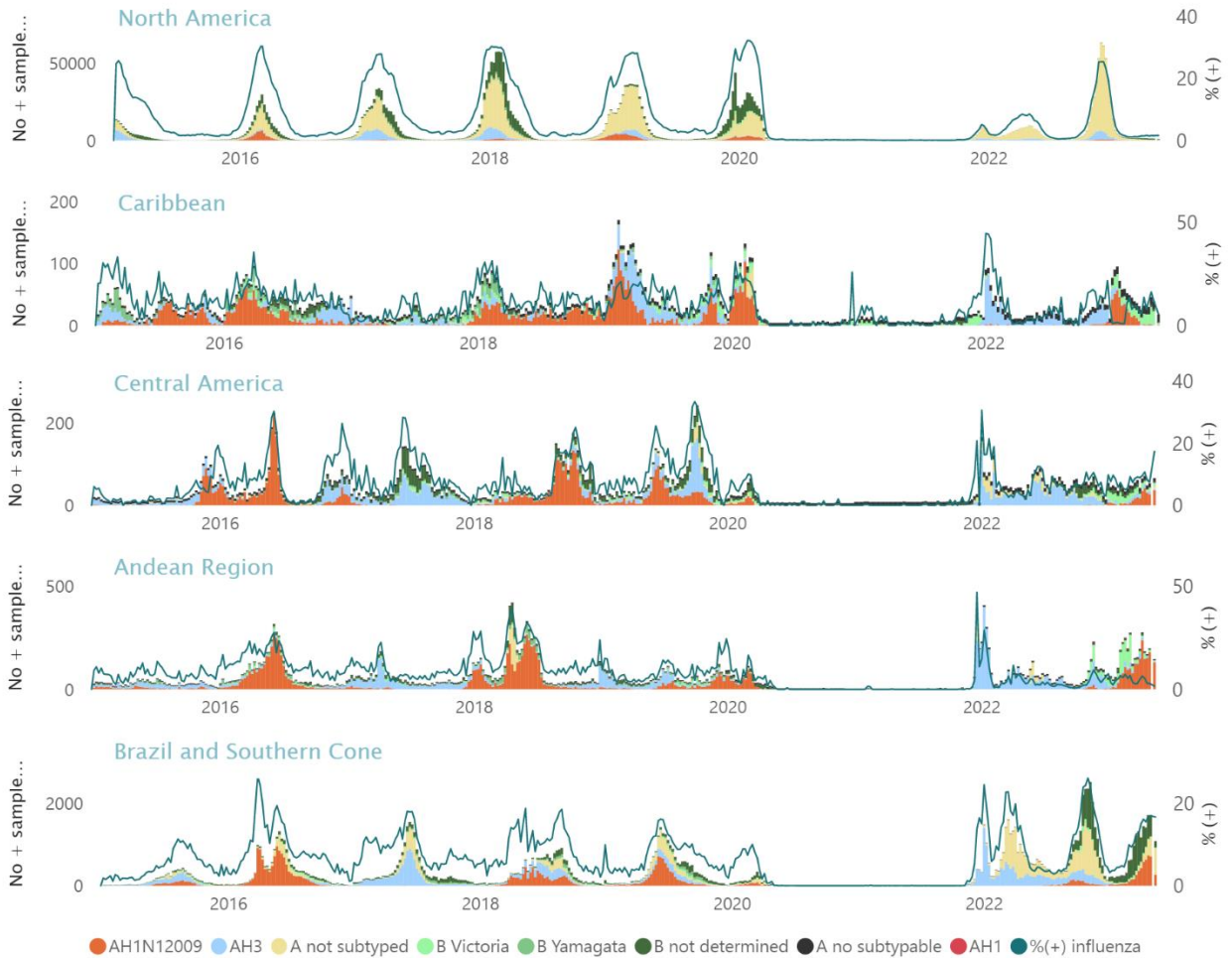
In **Mexico**, as measured by hospitalizations, SARI activity decreased above the seasonal average and at moderate levels of intensity. Likewise, influenza percent positivity peaked steadily since EW 8 and was at moderate levels of intensity compared to the seasonal average, with influenza B/Victoria detections predominance. RSV activity was low.

In the **United States**, influenza circulation remained at low levels compared to the seasonal average with both influenza A and B co-circulating. RSV activity and SARS-CoV-2 circulation remained at low levels with decreased new hospital admissions and deaths related to COVID-19.

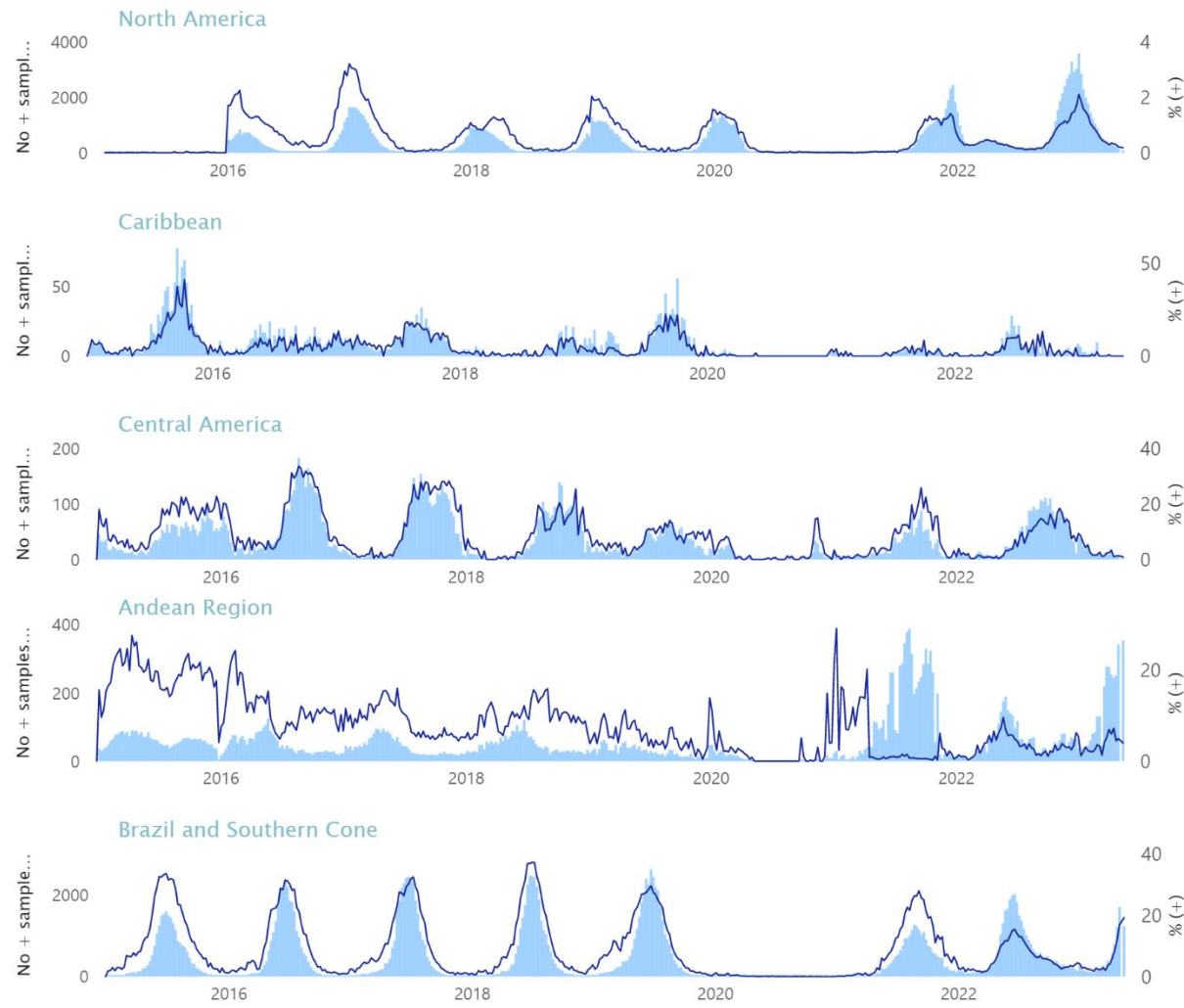
⁸ Aruba, the Bahamas, Barbados, Bermuda, the Cayman Islands, Cuba, Curacao, Dominica, the Dominican Republic, French Guiana, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago.

⁹ Canada, Mexico, and the United States.

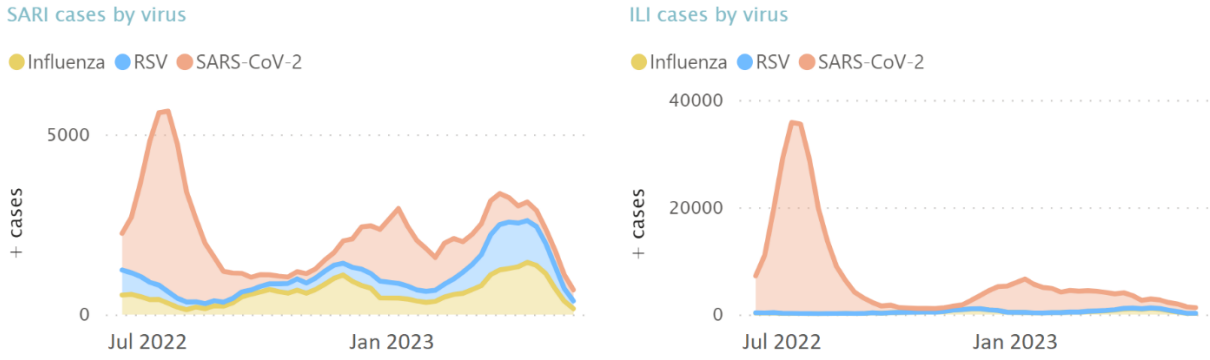
Influenza virus distribution and percent positivity by subregion, 2015-2023, Region of the Americas



Respiratory Syncytial virus distribution and percent positivity by subregion, 2015-2023, Region of the Americas



SARI and ILI cases by virus, Region of the Americas, 2022-2023



Zoonotic Influenza

As of EW 21 of 2023, agricultural authorities in Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Ecuador, Guatemala, Honduras, Mexico, Panama, Peru, The United States of America, Uruguay, and Venezuela have detected outbreaks of avian influenza A(H5N1) in domestic birds, farm poultry and/or wild birds, and in mammals. Since the introduction of avian influenza A(H5N1) in the Americas in 2014, three human infections caused by influenza A(H5N1) have been reported: the first in the United States of America, notified on 29 April 2022, the second in Ecuador, which was notified on 9 January 2023, and the third in Chile, which was notified on 29 March 2023. No other human infections have been recorded as of 5 June 2023.

PAHO/WHO reiterates that the recommendations to strengthen the response to this event are available at: [Epidemiological Update: Outbreaks of avian influenza caused by influenza A\(H5N1\) in the Region of the Americas - PAHO/WHO | Pan American Health Organization](#) and at [Strengthening the intersectoral work for Influenza at the Human Animal Interface in the Region of the Americas: Technical Questions and Answers - PAHO/WHO | Pan American Health Organization](#).

Recommendations

Considering the increased activity and hospitalizations caused by seasonal influenza, RSV, and SARS-CoV-2 in the region, PAHO/WHO reiterates its recommendations to Member States regarding surveillance, prevention and control, immunization against influenza and COVID-19, clinical management of patients, appropriate organization of health care services, implementation of infection prevention control measures in health care services, and communication with the public about measures. These areas are essential to address, considering the ongoing season of respiratory viruses in southern hemisphere countries.

Following is a summary of the main recommendations for surveillance, clinical management, risk communication and vaccination.

Surveillance

PAHO/WHO recommends Member States to integrate the surveillance of influenza, RSV, SARS-CoV-2 and other respiratory viruses in the national existing platforms and to report surveillance data to the Global Influenza Surveillance and Response System (GISRS) through FluNET and Fluid platforms.

States Parties are recommended to continue strengthening influenza-like illness (ILI) surveillance and prioritizing SARI surveillance complemented with other surveillance strategies¹⁰ to monitor epidemiological changes and viral circulation trends to assess transmission patterns, clinical severity, and impact on the healthcare system and society, and to identify at-risk groups of developing respiratory associated complications.

PAHO/WHO recommends Member States implement event-based surveillance to accompany indicator-based surveillance. Event-based surveillance is the organized and

¹⁰ [WHO Mosaic Respiratory Surveillance Framework](#)

rapid capture of information about events that may pose a potential risk to public health. The information may come from rumors and other ad-hoc reports transmitted through formal (pre-established routine information systems) or informal -not pre-established routine information systems (i.e., media, direct communication from health care workers, or non-governmental organizations) channels. Event-based surveillance is a functional component of the early warning and response mechanism¹¹.

Respiratory events that are unusual should be investigated and reported immediately. Unusual events include cases with atypical clinical progression; acute respiratory infection associated with animal disease exposure or observed in travelers to areas prone to novel influenza virus emergence; SARI among health care professionals; or clusters of respiratory viral infections outside the regular circulation season.

As part of routine respiratory surveillance and for the etiological confirmation of unusual cases, nasopharyngeal and oropharyngeal specimens (or bronchial lavage in severe cases) should be obtained to detect respiratory viruses. Laboratory analysis of the most severe cases should always be prioritized, especially fatal cases (deaths), where processing tissue samples from the respiratory tract is also recommended when available. All biosafety measures for respiratory pathogens should be granted. The technical guidelines and diagnostic algorithms of the National Influenza Center or the national reference laboratory responsible for laboratory surveillance should be followed. The recommended testing algorithms for influenza, RSV and SARS-CoV-2 are available at: [Influenza and other respiratory viruses - PAHO/WHO | Pan American Health Organization](#)

Influenza-positive specimens from severe cases or those with unusual presentations must be sent to the PAHO/WHO Collaborating Center at the United States Centers for Disease Control and Prevention (CDC) in Atlanta for further characterization, according to WHO guidelines¹². Influenza A unable to subtype samples (those positive for Influenza A but where the PCR for subtyping is negative or inconclusive) should also be sent immediately to the PAHO/WHO Collaborating Center at the U.S. CDC.

Influenza-positive specimens from animals, must be sent to the PAHO/WHO Collaborating Center at St. Jude's Hospital in Memphis, Tennessee, in the United States, for further characterization.

Clinical management

Recommendations for the clinical management of patients with severe respiratory disease indicated in previous [PAHO/WHO guidelines and Epidemiological Alerts and Updates](#) continue to apply. Groups at higher risk of developing influenza-associated complications include children less than two years of age; adults over 65 years; pregnant or post-partum women; people with underlying clinical morbidity (e.g., chronic lung disease, asthma, cardiovascular diseases, chronic kidney disease, chronic liver disease, diabetes mellitus, neurological conditions such as central nervous system injuries and delayed cognitive

¹¹ Early detection, assessment, and response to acute public health events: implementation of early warning and response with a focus on event-based surveillance: WHO: 2014. Available at: http://www.who.int/ihr/publications/WHO_HSE_GCR_LYO_2014.4/en/

¹² <https://www.who.int/publications/i/item/operational-guidance-on-sharing-seasonal-influenza-viruses>

development); people with immunosuppression (e.g., HIV/AIDS or due to medications); and people with morbid obesity (body mass index greater than 40).

Any person with severe or progressive clinical presentation of respiratory illness should be treated with antivirals as soon as influenza is suspected or treated according to the recent guidelines in case of COVID-19 is suspected¹³. Treatment should be initiated even before having laboratory confirmation of respiratory infection as treatment is more successful if started early. In persons with suspected or confirmed influenza virus infection with or at risk of severe illness (i.e. including seasonal influenza, pandemic influenza and zoonotic influenza), we suggest administering oseltamivir as soon as possible. We suggest not administering inhaled zanamivir, inhaled laninamivir, intravenous peramivir, corticosteroids, passive immune therapy macrolide antibiotic for treatment of influenza.

In settings where batch RT-PCR or other rapid molecular influenza assays (with similar high sensitivity and high specificity) are available and results expected within 24 hours, we suggest a strategy of testing for influenza, treating with oseltamivir as soon as possible, and re-evaluating treatment when the test result is available.

In settings where batch RT-PCR or other rapid molecular influenza assays (with similar high sensitivity and high specificity) are not available to provide results within 24 hours, we suggest a strategy of not testing for influenza and treating with oseltamivir as soon as possible.

For more details see the guides, “Guidelines for the clinical management of severe illness from influenza virus infections. Geneva: World Health Organization; 2021.” available at: <https://apps.who.int/iris/handle/10665/352453>; and [Clinical care of severe acute respiratory infections – Tool kit \(who.int\)](#)

Guidelines for the clinical management of COVID-19, including the use of Antivirals, Monoclonal Antibodies, and Other Interventions for the Management of COVID-19 Patients are available at: [Technical Documents - Coronavirus Disease \(COVID-19\) - PAHO/WHO | Pan American Health Organization](#) and [Clinical management of COVID-19 \(who.int\)](#).

With regards RSV clinical management and prophylaxis, young infants are at higher risk for severe complications and hospitalisation with RSV infection and represent the highest morbidity burden. Many risk factors for RSV infections are like those identified for all-causes lower respiratory tract infections. There are no effective treatment and supportive care remains the cornerstone of clinical management. Currently, RSV treatment is symptomatic with no effective antiviral drugs. Passive immunisation with monoclonal antibodies - palivizumab- constitutes an appropriate intervention to reduce severe acute respiratory infection by RSV among at-risk infants.

Palivizumab prophylaxis was associated with a 43% rate reduction of RSV-related hospitalisations among children with hemodynamically significant congenital heart disease, and a reduction in recurrent wheezing. The cost and method of administration of the drug remain a challenge, although its cost-effectiveness is well-documented.

¹³ [Considerations on the Use of Antivirals, Monoclonal Antibodies, and Other Interventions for the Management of COVID-19 Patients in Latin America and the Caribbean \(paho.org\)](#)

Recently, two RSV vaccines for older adults were approved by the US Food & Drug Administration (FDA)^{14,15} for use in the United States for the prevention of lower respiratory tract disease caused by RSV in individuals 60 years of age and older. In clinical randomized trials, the vaccines reduced the risk of developing RSV-associated LRTD by 66.7%-6% and reduced the risk of developing severe RSV-associated LRTD by 94.1%.¹⁶

Currently and there has been a resurgence of vaccine development (vaccine candidates and long-lasting immunoprophylaxis with monoclonal antibodies) along with significant progress in the understanding of immune responses to RSV.

Key recommendations for RSV clinical management^{17,18,19} includes:

- The diagnosis of bronchiolitis and assessment of disease severity should be based on history and physical examination. Laboratory and radiologic studies should not be routinely ordered for diagnosis.
- Risk factors for severe disease such as age less than 12 weeks, premature birth history (particularly under 32 weeks), underlying cardiopulmonary disease (including bronchopulmonary dysplasia and haemodynamically significant congenital heart disease), neuromuscular disorders, or immunodeficiency should be assessed when making decisions about evaluation and management of children with bronchiolitis.
- Bronchodilators (albuterol, salbutamol), epinephrine, and corticosteroids should *not* be administered to infants and children with the diagnosis of bronchiolitis. Likewise, nebulized hypertonic saline should *not* be administered to infants with the diagnosis of bronchiolitis in the emergency department. Nebulized hypertonic saline may be administered to infants and children hospitalized for bronchiolitis.
- Antibiotics should *not* be used in children with bronchiolitis unless there is a concomitant bacterial infection.
- Palivizumab prophylaxis should be administered during the first year of life to infants with hemodynamically significant heart disease or chronic lung disease of prematurity (<32 weeks gestation who require >21% O₂ for the first 28 days of life).
- To prevent the spread of respiratory syncytial virus (RSV), hands should be decontaminated before and after direct contact with patients, after contact with inanimate objects in vicinity of patient, and after removing gloves. Alcohol rubs are the preferred method for hand decontamination. Clinicians should educate personnel and family on hand sanitation.

¹⁴ US FDA News Release, available at: <https://www.fda.gov/news-events/press-announcements/fda-approves-first-respiratory-syncytial-virus-rsv-vaccine>

¹⁵ US FDA News Release, available at: <https://www.fda.gov/vaccines-blood-biologics/abryso>

¹⁶ Additional information at US FDA, available at: <https://www.fda.gov/news-events/press-announcements/fda-approves-first-respiratory-syncytial-virus-rsv-vaccine>

¹⁷ Shawn L. Roston, et. al. Clinical Practice Guidelines: The Diagnosis, Management, and Prevention of Bronchiolitis. *Pediatrics*. 2014 (134(5)); e1474-e1502.

¹⁸ American Academy of Pediatrics (2014) Committee on Infectious Diseases; American Academy of Pediatrics Bronchiolitis Guidelines Committee. Updated guidance for palivizumab prophylaxis among infants and young children at increased risk of hospitalization for respiratory syncytial virus infection. *Pediatrics*. 2014 Aug;134(2):e620-38. doi: 10.1542/peds.2014-1666. PMID: 25070304.

¹⁹ American Academy of Pediatrics (2022) Updated Guidance: Use of Palivizumab Prophylaxis to Prevent Hospitalization From Severe Respiratory Syncytial Virus Infection During the 2022-2023 RSV Season, *Pediatrics*, <https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/interim-guidance-for-use-of-palivizumab-prophylaxis-to-prevent-hospitalization/>

- Infants should not be exposed to tobacco smoke.
- Exclusive breastfeeding for at least 6 months is recommended to decrease the morbidity of respiratory infections.

Risk Communication

Seasonal influenza, RSV and COVID-19 are acute viral infections that spreads easily from person to person. Respiratory viruses circulate worldwide and can affect anyone from any age group. Vaccination prior to the start of seasonal virus circulation remains the best preventive measure against severe influenza.

The public should be informed that the main mode of transmission is by interpersonal contact. Hand washing is the most efficient way to decrease transmission. Knowledge about "respiratory etiquette" also helps to prevent transmission.

People with fever and respiratory symptoms should avoid going to workplaces or public places until the fever subsides. Similarly, school-age children with respiratory symptoms and / or fever should stay at home and not go to school.

To leverage on the knowledge that most of the public has acquired on respiratory disease prevention -brought by the COVID-19 pandemic-, and to prevent confusion and exercise effective communication, Member States should consider developing risk communications strategies and campaigns that integrate prevention messaging for respiratory viruses. Integration of communication is also advised for the promotion of influenza and COVID-19 vaccination.

Vaccination

Immunization is an important strategy for preventing severe outcomes of seasonal influenza and COVID-19, including hospitalizations and associated deaths.

PAHO/WHO recommends vaccination of groups at particular risk of severe disease, including older adults, people with underlying conditions, children under 59 months and pregnant individuals. Health workers are at increased risk of exposure and transmission of influenza and SARS-CoV-2 virus and therefore should also be prioritized.

Apart from vaccination, personal measures such as hand hygiene, physical distancing, respiratory etiquette, mask use, and staying home when sick, should be observed, which are effective in limiting respiratory viruses transmission¹².

Non pharmacological public health measures in populations

As recently evidenced during the COVID-19 pandemic, non-pharmacological public health measures complement the response to respiratory events.

For more details see the guides: "Non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza", available at: <https://www.who.int/publications/i/item/non-pharmaceutical-public-health-measuresfor->

[mitigating-the-risk-and-impact-of-epidemic-and-pandemic-influenza](#) , and the “Guidance for implementing non-pharmacological public health measures in populations in situations of vulnerability in the context of COVID-19-PAHO/WHO”, available at: <https://www.paho.org/en/documents/guidance-implementing-non-pharmacological-public-health-measures-populations-situations-03>

Related Links

Surveillance

- [Statement on the thirteenth meeting of the International Health Regulations \(2005\) Emergency Committee regarding the coronavirus disease \(COVID-19\) pandemic \(who.int\)](#)
- [End-to-end integration of SARS-CoV-2 and influenza sentinel surveillance: revised interim guidance \(who.int\)](#)
- [Final report Ad hoc expert consultation in the Region of the Americas: Challenges, gaps and next steps in COVID 19 surveillance and its integration in to influenza and other respiratory viruses surveillance - PAHO/WHO | Pan American Health Organization](#)
- PAHO/WHO Epidemiological Alerts on Influenza are available at: www.paho.org/epialerts
- <https://www.who.int/teams/global-influenza-programme/surveillance-and-monitoring/influenza-updates>
- Influenza Reports. Pan American Health Organization / World Health Organization. Available at: <https://www.paho.org/en/influenza-situation-report>
- Manual for the laboratory diagnosis and virological surveillance of influenza. 2011. Available at: <https://apps.who.int/iris/handle/10665/44518>
- World Health Organization. Early detection, assessment and response to acute public health events: Implementation of Early Warning and Response with a focus on Event-Based Surveillance. Interim Version. WHO/HSE/GCR/LYO/2014.4. Geneva: WHO: 2014. Available at: <https://apps.who.int/iris/handle/10665/112667>
- Technical Documents - Coronavirus Disease (COVID-19). Available at <https://www.paho.org/en/technical-documents-coronavirus-disease-covid-19>

Clinical management

- [Clinical care of severe acute respiratory infections – Tool kit \(who.int\)](#)
- [Guide pour la prise en charge des patients adultes en état critique atteints de COVID-19 dans les Amériques. Version abrégée 3 \(paho.org\)](#)
- [Considerations on the Use of Antivirals, Monoclonal Antibodies, and Other Interventions for the Management of COVID-19 Patients in Latin America and the Caribbean \(paho.org\)](#)
- [Guidelines for the clinical management of severe illness from influenza virus infections. Geneva: World Health Organization; 2021](#)

Vaccines

- [Recommended composition of influenza virus vaccines for use in the 2022-2023 northern hemisphere influenza season \(who.int\)](#)

Human-animal interface

- [Avian influenza \(who.int\)](#)
- [WAHIS \(woah.org\)](#)
- [Disease Outbreak News \(who.int\)](#)
- [Informe de situación de Influenza | OPS/OMS | Organización Panamericana de la Salud \(paho.org\)](#)
- [Human infection with avian influenza A\(H5\) viruses. Update 4 November 2002](#)
- [Influenza at the Human-Animal Interface: PAHO Recommendations to Strengthen Intersectoral Work for Surveillance, Early Detection, and Investigation, 9 July 2020](#)
- [Influenza at the human-animal interface summary and assessment, 5 October 2022 \(who.int\)](#)