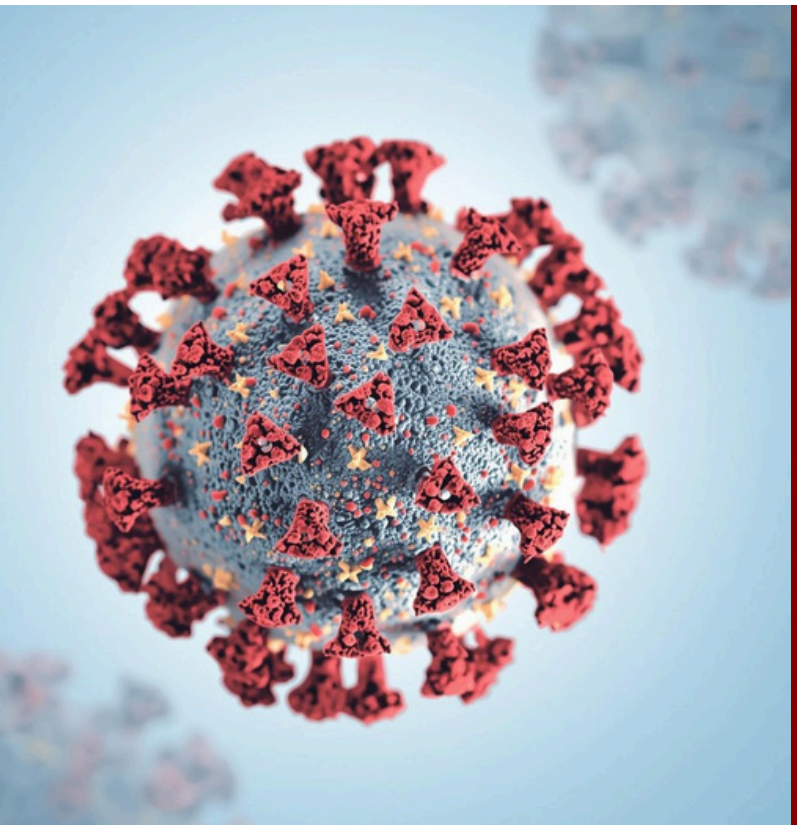
SPHERE
Driving development through data

Policy Brief

RSV Burden and Vaccine Introduction in Pakistan

Health system considerations for introducing maternal vaccine



January 2026

Contributors

This policy brief, RSV Burden and Vaccine Introduction in Pakistan, has been developed to inform and support national dialogue on the introduction of maternal RSV vaccination. It reflects the professional insights and independent perspectives of public health experts and stakeholders with experience in immunization, maternal and child health.

List of Authors

1. Naeem Majeed
2. Waheed Ahmed
3. Amama Maqsood
4. Zainab Dawood
5. Muhammad Ali A Sadiq

Recommended Citation

Majeed N, Ahmed W, Maqsood A, Dawood Z, Sadiq MAA. (2026) RSV Burden and vaccine introduction in Pakistan. SPHERE Consulting. https://doi.org/10.5281/zenodo.18195182

https://doi.org/10.5281/zenodo.18195182

Acronyms

AEFI	Adverse Events Following Immunization
ANC	Antenatal Care
CDC	Centers for Disease Control and Prevention
EPI	Expanded Programme on Immunization
GBS	Group B Streptococcus
IA2030	Immunization Agenda 2030
ICU	Intensive Care Unit
LMICs	Low- and Middle-Income Countries
LRTIs	Lower Respiratory Tract Infections
MIRNA	Maternal Immunization Readiness Network in Africa & Asia
MIS	Management Information System
RSV	Respiratory Syncytial Virus
SARI	Severe Acute Respiratory Infection
Td	Tetanus-Diphtheria Vaccine
TT	Tetanus Toxoid
WHO	World Health Organization

Understanding Respiratory Syncytial Virus (RSV) and its Impact

Respiratory syncytial virus (RSV) is a common respiratory pathogen that affects the lower respiratory tract. It usually causes mild cold-like symptoms but can lead to severe disease in vulnerable populations.

RSV is the most common cause of hospitalization in infants. Most children are infected with RSV by the time they reach their second birthday.

3-8 days

Duration of contagious period

RSV can remain contagious for three to eight days in adults after symptoms appear.

10 days

Recovery time for most patients

Recovery from RSV symptoms lasts about 10 days, but can extend longer for infants.

Population at Risk



- Infant under 12 Months (especially <6 months)
- Premature babies
- Children with chronic lung/heart disease or weak immunity



- Adults 60-65 years and older, with risk increasing significantly after 75
- Older adults with chronic conditions
- Weakened immunity

Global Burden

RSV is a leading cause of lower respiratory tract infections (LRTIs) in infants and older adults worldwide.

Annual Burden



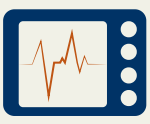
33 Million

Infections in children under five



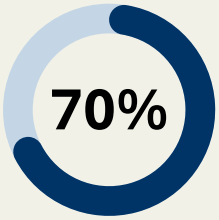
3.6 Million

Hospitalization in children under five

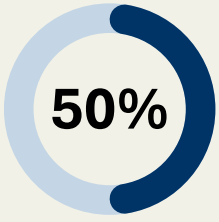


101,000 Deaths

Among children under five



Effectiveness of clinical trial in preventing severe RSV illness in first **6 Months of Life**



Among infants hospitalized before the start of RSV season

RSV Burden in Pakistan

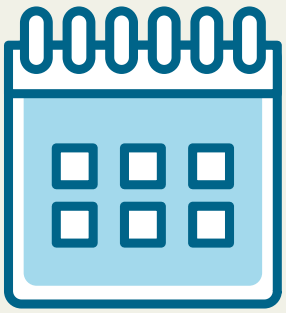
Respiratory syncytial virus (RSV) is a significant cause of respiratory illness among infants and young children in Pakistan, but little is known about the RSV burden in infant mortality.

- The majority of cases occur in children under two years of age, and infants younger than six months are at the highest risk of severe disease.
- While premature infants and those with chronic lung or heart conditions are particularly vulnerable, more than 70% of severe RSV cases are observed in otherwise healthy, term infants.
- Postmortem surveillance in Karachi detected RSV in 3.7% of infant deaths, primarily among neonates during RSV season.

RSV positivity in hospitalized SARI cases

14 - 19%

(2022–2025)



Peak Season

December to February

Current Gap

- There is no nationally representative RSV burden study in Pakistan, making it difficult to quantify the true scale of disease and mortality.
- Insufficient data on RSV-attributable adverse pregnancy outcomes, such as preterm birth and low birth weight, limits the ability to design targeted maternal immunization strategies.

Prevention from RSV

There is no specific treatment for RSV. Management of severe RSV disease involves supportive care, such as nasal suction of secretions, intravenous fluids for hydration, etc. To help reduce the risk of RSV infection these essential hygiene practices are recommended:



Wash hands frequently: Use soap and water for at least 20 seconds, especially after coughing, sneezing, or touching shared surfaces.



Avoid close contact with sick individuals: Keep babies and older adults away from people who have cold-like symptoms



Do not share personal items: Avoid sharing drinks, utensils, pacifiers, or toys with individuals who are sick.



Practice respiratory etiquette: Cover your nose and mouth with a tissue or your elbow when coughing or sneezing.



Dispose of tissues immediately: Throw used tissues in the trash right away and wash hands afterward.

RSV Vaccine

There are two immunization options available for protecting infants against RSV: maternal vaccine for the pregnant woman or preventive antibodies given to the baby. Only one of these options is needed for most babies to be protected. Meanwhile, RSV vaccines for older adults have been introduced and recommended in many countries to prevent serious RSV illness in seniors.

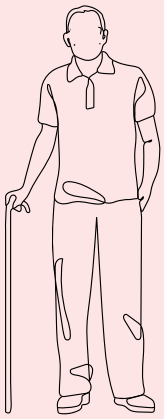


Maternal RSV Vaccine (to protect the newborn)



The first maternal RSV vaccine was prequalified by WHO on 12 March 2025, enabling global procurement. It's given as a single dose in late pregnancy (32-36 weeks gestation) to provide immunity to the newborn. This vaccine protects infants for ~5-6 months after birth by transplacental antibody transfer.

RSV Vaccines for Older Adults



RSV vaccines became available for adults aged 60+ in 2023. WHO has not issued formal elderly RSV vaccine guidance as of 2025, focusing first on infant protection.

- CDC recommends RSV vaccination for all adults 75 and older, and for adults 60-74 who have underlying risk factors for severe RSV (e.g. chronic heart or lung disease, diabetes with complications, immunocompromise, etc).
- In mid 2025 the recommendation was expanded to include some younger adults 50-59 years who are at high risk (e.g. those with significant medical conditions), as determined by healthcare providers.

Recommended use by population group

Target Population	Recommendation
Pregnant Women	**One dose during late 2nd or early 3rd trimester of pregnancy**
Adults 75+	**Routine RSV vaccination. One dose recommended for all.**

WHO Guidelines for LMICs

- **Prioritize Maternal Immunization**

WHO recommends protecting infants from RSV through either maternal vaccination or infant monoclonal antibodies, based on country feasibility. For LMICs, maternal RSV vaccination is prioritized as it leverages existing antenatal care (ANC) services, is more cost-effective, and ensures protection from birth especially important where home births and limited neonatal access are common.

- **Integration into Antenatal Care**

WHO advises integrating maternal RSV vaccination into routine ANC, ideally during the third trimester (≥28 weeks) when antibody transfer is optimal. This approach builds on established maternal immunization platforms and helps protect infants during the first six months of life, when the risk of severe RSV disease and mortality is highest.

Disease Burden and Policy Justification

- Pakistan has a high neonatal and infant mortality rate which amplifies the vulnerability to RSV-related complications.
- Limited access to advanced respiratory care, including paediatric intensive care units and mechanical ventilation, increases the risk of severe outcomes in RSV-infected infants.

NMR ~42 per 1,000 live births



IMR ~62 per 1,000 live births



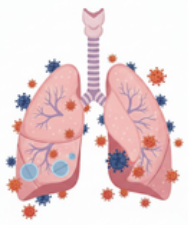
Pneumonia remains the leading infectious cause of death among children under five globally, claiming over 700,000 lives each year; approximately 2,000 deaths per day. Of these, around 190,000 are newborns. The global incidence exceeds 1,400 cases per 100,000 children, with the highest rates in South Asia (2,500 per 100,000). Nearly all pneumonia-related deaths are preventable.

RSV: A major contributor to pneumonia burden

~37,600

Pneumonia-related deaths among children under five in Pakistan





20-30%

Global childhood pneumonia cases are attributed to RSV

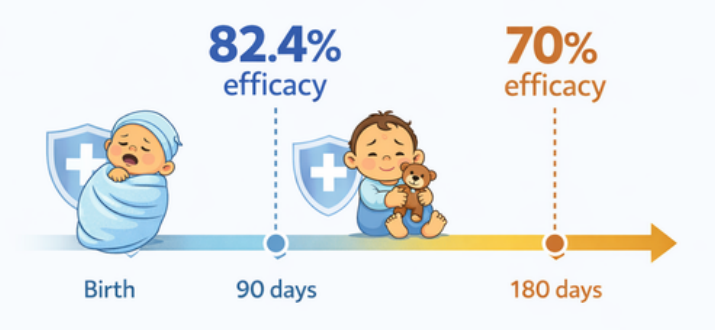


~11,000

Estimated annual under-5 deaths attributable to RSV in Pakistan

Maternal RSV vaccine as timely and targeted solution

The maternal RSV vaccine, administered during late pregnancy (32–36 weeks gestation), provides passive immunity to newborns through transplacental antibody transfer. In Pakistan, this could prevent an estimated 2,000 infant deaths annually, roughly one-third of RSV-related mortality. The maternal RSV vaccine showed 82.4% efficacy against severe RSV-related illness in infants at 90 days, and 70 % at 180 days after birth.



Cost-effectiveness and feasibility

PATH studies from Kenya estimate an incremental service delivery cost of approximately USD 1.30 per dose (excluding vaccine price), indicating that maternal RSV vaccination can be delivered at low additional cost by leveraging existing antenatal care and EPI platforms.

This highlights the urgent need for Pakistan to prioritize maternal RSV vaccine introduction as a cost-effective, high-impact intervention to reduce infant mortality and strengthen our immunization program.

Integration with Pakistan's Expanded Programme on Immunization

To plan and deliver successful immunization programmes, policymakers and health system planners may consider the following areas:

Strengthen governance systems to support adoption of new RSV immunization strategies

Plan strategies and protocols for organizing and delivering RSV immunization

Increase community engagement to build trust and improve vaccine uptake

Strengthen monitoring systems with RSV-specific indicators

Maternal RSV vaccine integration

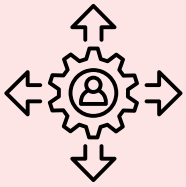


The vaccine should be administered during the late second or early third trimester of pregnancy, ideally alongside tetanus toxoid (TT) or tetanus-diphtheria (Td) doses already scheduled during antenatal visits.

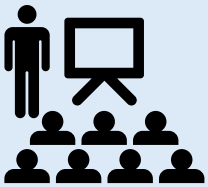


Cold chain systems currently supporting EPI vaccines can be adapted to accommodate the storage and distribution requirements of the RSV vaccine.

Programmatic considerations



Establish a national decision-making framework to guide the prioritization, financing, and phased introduction of maternal RSV vaccination within the national immunization schedule.



Education strategies for healthcare professionals and the public must be designed to support delivery and uptake of RSV immunisations. Training modules and operational guidelines should be updated to equip vaccinators and healthcare providers with the necessary knowledge and skills.



Community engagement strategies must be strengthened to build trust, address vaccine hesitancy, and ensure high uptake among pregnant women.



Monitoring and evaluation systems, including Adverse Events Following Immunization (AEFI) surveillance and the EPI Management Information System (EPI-MIS), should be updated to include RSV-specific indicators.

Strategic Alignment with National and Global Priorities

The introduction of the maternal RSV vaccine aligns with key national and international health strategies:

- It supports the objectives of Pakistan's National Immunization Strategy (2025–2029), which emphasizes the expansion of life-course immunization and the integration of maternal vaccines.
- It contributes to the goals of the WHO Immunization Agenda 2030 (IA2030), particularly in reducing mortality from vaccine-preventable diseases and promoting equitable access to immunization.
- It complements ongoing efforts under the Maternal Immunization Readiness Network (MIRNA) in Africa and Asia, which is preparing countries for the introduction of maternal vaccines against RSV and Group B Streptococcus (GBS).

Conclusion

Maternal RSV vaccination is a practical, life-saving intervention that Pakistan cannot afford to overlook. With RSV driving a significant share of pneumonia-related deaths especially among infants under six months, this vaccine offers early protection when children are most vulnerable. Countries that have implemented maternal immunization and long-acting antibodies have already seen dramatic reductions in hospitalizations. Aligning with Pakistan's National Immunization Strategy and global health priorities under the WHO Immunization Agenda 2030, prioritizing maternal RSV vaccination now will not only save thousands of young lives annually but also reinforce the resilience and equity of Pakistan's public health system.

References

1. WHO Fact Sheets- RSV https://www.who.int/news-room/fact-sheets/detail/respiratory-syncytial-virus-(rsv)
2. CDC. RSV Vaccination Recommendations for Adults. MMWR. 2025.
3. Global, regional, and national disease burden estimates of acute lower respiratory infections due to respiratory syncytial virus in young children in 2015: a systematic review and modelling study
4. Shi, Ting et al. The Lancet, Volume 390, Issue 10098, 946 – 958
5. World Health Organization (WHO). RSV Vaccine Position Paper. 2025.
6. Centers for Disease Control and Prevention (CDC). Respiratory Syncytial Virus (RSV) VIS. https://www.cdc.gov/vaccines/hcp/current-vis/downloads/rsv.pdf
7. Badar N, et al. Respiratory Syncytial Virus Surveillance in Pakistan: Epidemiology and Seasonality. Viruses. 2025.
8. Aziz F, et al. RSV Genotype Diversity and Seasonality in Pakistan. International Journal of Infectious Diseases. 2023.
9. Kazi AM, et al. Postmortem Surveillance for Respiratory Viruses in Infants in Karachi, Pakistan. Clinical Infectious Diseases. 2021.
10. Esposito S, Abu Raya B, Baraldi E, et al. (2022). RSV prevention in all infants: which is the most preferable strategy? Front. Immunol. 13: 880368.
11. UK Department of Health and Social Care (2023). RSV immunisation programme for infants and older adults: JCVI full statement, 11 September 2023.
12. World Health Organization (WHO). RSV Vaccine Position Paper. 2025.
13. UNICEF. Pneumonia in Children Statistics. https://data.unicef.org/topic/child-health/pneumonia/
14. RESCEU Global RSV Burden Study, The Lancet, 2022
15. Kampmann B, Madhi SA, Munjal I, et al. 2023. Bivalent prefusion F vaccine in pregnancy to prevent RSV illness in infants. N Engl J Med 388(16): 1451-64
16. PATH, Maternal RSV Vaccine Delivery Cost Studies, 2022.

© SPHERE Consulting

This policy brief reflects the independent professional opinions of public health experts and the team at SPHERE Consulting. All recommendations are based on evidence from globally recognized scientific literature and recent surveillance data. This document is intended to inform and support policy dialogue on the introduction of maternal RSV immunization in Pakistan.

For further details/comments, please write to us at info@sphereconsulting.services

January 2026

Prepared by:
SPHERE Consulting
Pakistan