

Review Article

Respiratory Syncytial Contagion – A Narrative Review on Its History, Pathophysiology, Diagnosis, Treatment and Prevention

Margret Chandira Rajappa¹, Sanjay Gnana Moorthi², Ranjithkumar Sivaji³, Pavithra Palanivel⁴, Manishakumari Prameshwar Singh⁵, Arun Tamil Vanan⁶

¹Professor & HOD Department of Pharmaceutics, Vinayaka Mission's College of Pharmacy, Vinayaka Mission's Research Foundation, (Deemed to be University), Salem, Tamil Nadu, India.

^{2,3,4,5,6}Student, Department of Pharmaceutics, Vinayaka Mission's College of Pharmacy, Vinayaka Mission's Research Foundation, (Deemed to be University), Salem, Tamil Nadu, India.

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Corresponding Author:

Margret Chandira Rajappa, Department of Pharmaceutics, Vinayaka Mission's College of Pharmacy, Vinayaka Mission's Research Foundation, (Deemed to be University), Salem, Tamil Nadu, India.

E-mail Id:

mchandira172@gmail.com

Orcid Id:

<https://orcid.org/0000-0002-6553-0825>

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A B S T R A C T

Respiratory syncytial contagion (RSC) is a common respiratory contagion that generally leads to mild, cold-like symptoms. However, it can be severe, especially in babies and aged grown-ups who may face hospitalisation. A comprehensive review of RSC is important as it covers various aspects like its history, mechanism, causes, symptoms, duration, treatment, incubation, complications, and prevention, furnishing a thorough understanding of this viral infection that affects the respiratory system. This review explores the crucial aspects of RSC, including its transmission, symptoms, and implicit complications. RSC is highly contagious and spreads through respiratory droplets when an infected person coughs or sneezes. Common symptoms include coughing, sneezing, fever, and difficulty breathing. High-risk premature babies, individuals with weakened vulnerable systems, and senior citizens are at advanced threat for severe RSC infections. Preventative measures include good hygiene practices, similar to frequent hand washing, and vaccination in certain high-threat populations. Palivizumab, a monoclonal antibody, may also be administered to help severe RSC in certain babies. There is no specific antiviral treatment for RSC, but preventive care is essential. This may include oxygen remedy, hydration, and in severe cases, hospitalisation.

Keywords: Respiratory Syncytial Contagion (RSC), Palivizumab, Ribavirin, Paediatric Children, Treatment, Prevention

Introduction

Respiratory syncytial contagion (RSC) is considered to be a leading global cause of morbidity and mortality, especially amongst babies in the first six months of life. It is the most

common cause of acute respiratory infection (ARI) and the single major cause of hospitalisation during the early years of life. In resource-poor settings, it is an important cause of death due to lower respiratory tract infection, second only to pneumococcal pneumonia and *H. influenzae*

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type B. Resource-limited countries have more than twice the prevalence of severe complaints as seen in developed countries and, remarkably, multiple global deaths caused by Respiratory Syncytial Virus (RSV) infection.¹

RSC is a formidable adversary in the realm of respiratory infections, particularly affecting infants during their vulnerable first six months of life. Its ability to cause severe illness and high hospitalisation rates underscores the urgent need for effective preventive measures and treatment options. Despite decades of research, the development of a universally effective vaccine remains elusive, highlighting the ongoing challenges in combating RSC. This review article provides a comprehensive overview of RSC, tracing its historical milestones, elucidating its clinical significance, and emphasising the pressing need for continued research and intervention efforts to mitigate its global burden on public health.

RSC is a monotypic contagion which is unique among respiratory pathogens because of the unusual characteristics of its structural proteins and its proclivity to cause serious lower respiratory tract symptoms in babies. It is responsible for the highest number of cases of pneumonia and bronchiolitis among babies and children under 4 years of age, especially among those between 2 and 6 months of age.²

People infected with RSV are generally contagious for 3 to 8 days and may become contagious a day or two before they start showing signs of illnesses. RSV can survive for numerous hours on hard shells like tables and crib rails. It generally lives on soft shells and hands for shorter durations of time. Its taxonomy is as follows:

- Class - Monjiviricetes
- Family - Pneumoviridae
- Kingdom - Orthornavirae
- Phylum - Negarnaviricota
- (Unranked) Contagion

Types of Respiratory Syncytial Contagion Infections

Upper respiratory tract infection: This type of RSC infection typically manifests as symptoms similar to common cold. It includes symptoms such as runny nose, coughing, sneezing, fever, and mild congestion.

Lower respiratory tract infection: RSC can also lead to more severe lower respiratory tract infections, especially in infants, young children, and older adults. This can result in bronchiolitis (inflammation of the small airways in the lungs) or pneumonia. Symptoms of this type of infection include severe coughing, wheezing, difficulty breathing, and high fever.

RSC is highly contagious and can spread through respiratory droplets when an infected person coughs or sneezes. It is important to take preventive measures like handwashing, avoiding close contact with sick individuals, and practising good respiratory hygiene to reduce the risk of transmission, particularly in vulnerable populations.

History of Respiratory Syncytial Contagion

The contagion was first isolated in 1956 from a chimpanzee with mild upper respiratory illness and was named "Chimpanzee Coryza Agent". Following this, identical contagions were isolated from two babies, both with lower respiratory complaints. The contagion was renamed Respiratory Syncytial Virus (RSV) in recognition of its characteristic cytopathogenic effect in Tissue culture. A series of epidemiologic studies in the early 1960s established that RSV was associated with bronchiolitis and pneumonia in children more consistently than any other agent, particularly in the first year of life.

RSC was first described as acute catarrhal bronchitis in 1901. It is currently accountable for 45–90 cases of bronchiolitis, 15–35 cases of pneumonia, and 6–8 cases of croup.³

Past research linked it as a major cause of respiratory infections in humans, particularly babies and immature children. RSC outbreaks and afflictions were noted in the 1960s, leading to increased research into its transmission, symptoms, and treatment options.⁴ By 1970, RSC was recognised as a significant cause of bronchiolitis and pneumonia in babies, frequently requiring hospitalisation.

In 1998, the FDA approved palivizumab, a monoclonal antibody to protect babies at high risk from developing a serious RSC infection. Ongoing research on RSC continues, with ongoing tests to develop vaccines and antiviral treatments. RSC remains a major respiratory pathogen, particularly in babies and the elderly, and continues to be a subject of scientific exploration and healthcare concern.⁵

Pathophysiology of Respiratory Syncytial Contagion

The pathophysiology of RSC has been depicted in the form of a flowchart in Figure 1. It includes the following:

1. **Transmission:** RSC is primarily transmitted through respiratory droplets from an infected person. It can survive on surfaces for several hours, facilitating indirect transmission through contact with contaminated surfaces.
2. **Entry and attachment:** RSC enters the body through the respiratory tract, usually via the nose or mouth. The virus attaches to the surface of respiratory epithelial cells using viral surface proteins, notably the F (fusion) and G (attachment) proteins.
3. **Replication:** Once attached, RSC fuses with the host

cell membrane and releases its genetic material into the host cell. The virus then uses the host cellular machinery to replicate itself.

4. **Cellular invasion:** RSC infects and replicates within epithelial cells of the respiratory tract, primarily targeting the bronchioles and alveoli. This leads to inflammation and damage to the airway epithelium.
5. **Syncytia formation:** RSC can cause the fusion of infected cells, forming syncytia. This syncytium formation is a hallmark of RSC infection and contributes to the pathophysiology of the disease.
6. **Inflammatory response:** The infection triggers an immune response, leading to the release of proinflammatory cytokines and chemokines. This immune response contributes to the characteristic symptoms of RSC infection, including fever, cough, and congestion.
7. **Mucus production:** RSC infection can stimulate the production of mucus in the airways. Excessive mucus production can further contribute to airway obstruction and difficulty in breathing.
8. **Obstruction and impaired gas exchange:** The combination of inflammation, mucus production, and bronchoconstriction can lead to airway obstruction, making it difficult for air to pass through the affected areas. This can result in impaired gas exchange and respiratory distress.
9. **Clinical manifestations:** In infants and young children, RSC infection often presents as bronchiolitis, characterised by coughing, wheezing, and difficulty breathing. In older children and adults, it can cause milder respiratory symptoms, similar to common cold.
10. **Complications:** Severe RSC infections can lead to pneumonia and may require hospitalisation, especially in infants and older adults. It can be life-threatening in certain vulnerable populations.

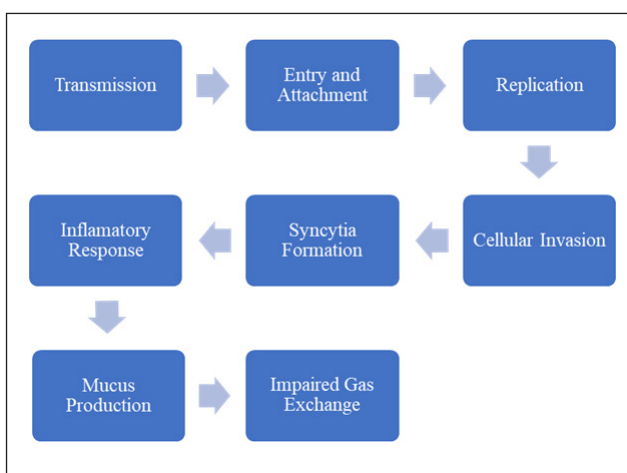


Figure 1. Pathophysiology of Respiratory Syncytial Contagion

Understanding the pathophysiology of RSC is essential for developing effective prevention and treatment strategies, especially in populations at higher risk, such as infants and immunocompromised individuals.

Structure of Respiratory Syncytial Contagion

RSC is a single-stranded RNA virus belonging to the Paramyxoviridae family.

1. **Envelope:** RSC has an outer lipid envelope derived from the host cell membrane. This envelope contains viral glycoproteins that are crucial for attachment and entry into host cells.
2. **Fusion (F) glycoprotein:** The F protein plays a key role in the fusion of the virus with the host cell membrane, allowing the virus to enter the cell.
3. **Attachment (G) glycoprotein:** The G protein helps the virus attach to the host cell surface receptors, facilitating infection.
4. **Nucleocapsid:** Inside the envelope, RSV has a helical nucleocapsid composed of the viral RNA genome and associated nucleoproteins.
5. **Matrix (M) protein:** The M protein lies beneath the viral envelope and helps maintain the shape of the virus particle.
6. **RNA genome:** RSC genetic material is a single-stranded, negative-sense RNA molecule. This genome carries the instructions for viral replication and protein synthesis.

Understanding the structure of RSV is essential for developing antiviral treatments and vaccines.

Causes of Respiratory Syncytial Contagion

RSC primarily spreads through respiratory droplets when an infected person coughs or sneezes. Here are some common causes of RSV contagion:

1. **Close contact:** RSC is highly contagious and easily spreads from person to person through close contact. When infected individuals cough, sneeze, or talk, they release virus-containing respiratory droplets that can be inhaled by those nearby.
2. **Surface contamination:** RSC can survive on surfaces for several hours. If anyone touches a contaminated surface (e.g., doorknobs, toys) and then touches the face, it can introduce the virus into the respiratory system.
3. **Crowded settings:** Environments where people are in close proximity, such as daycare centres, schools, and healthcare facilities, are common hotspots for RSC transmission.

- 4. Seasonal patterns:** RSC infections often exhibit seasonal variation, with outbreaks more prevalent in the fall and winter months in many regions.
- 5. Vulnerable individuals:** Infants, young children, the elderly, and those with weakened immune systems are at a higher risk of contracting RSC and experiencing severe symptoms. To prevent RSC contagion, it is crucial to practice good hygiene, including frequent handwashing, avoiding close contact with sick individuals, and keeping surfaces clean and disinfected. Adhering to healthcare guidelines is especially important for at-risk populations.⁶

Risk Factors of Respiratory Syncytial Contagion

RSC infection primarily affects the respiratory system, especially in infants and young children.⁷ While anyone can contract RSV, certain factors can increase the risk of infection:

- 1. Age:** Infants and young children, especially those under 2 years of age are at higher risk due to their underdeveloped immune systems.
- 2. Premature birth:** Preterm infants have weaker immune systems and underdeveloped lungs, making them more susceptible to severe RSC infections.
- 3. Daycare attendance:** Children in daycare settings are more likely to be exposed to RSC, as the virus can spread easily in close quarters.
- 4. Crowded living conditions:** In households with many family members or close quarters, RSC can spread more easily.
- 5. Weak immune system:** Individuals with weakened immune systems, such as those with HIV/ AIDS or certain medical conditions, are at greater risk.
- 6. Chronic lung disease:** People with chronic lung conditions like asthma or cystic fibrosis are more vulnerable to severe RSC infections.
- 7. Exposure to smoke:** Second-hand smoke can irritate the airways and make individuals more susceptible to RSC.
- 8. Seasonal factors:** RSC infections tend to be more common in the fall and winter months.⁸
- 9. Lack of breastfeeding:** Breastfeeding can provide some protection against RSC due to the antibodies passed from mother to child through breast milk.
- 10. Contact with infected individuals:** Close contact with someone who has an RSC infection, such as through coughing or sneezing, increases the risk of transmission.
- 11. Crowded healthcare settings:** Hospitals and clinics

can be sources of RSC transmission, especially for individuals with compromised health.

Preventing RSC infection often involves good hygiene practices, such as regular hand washing, avoiding close contact with sick individuals, and practising proper respiratory etiquette (covering mouth and nose when coughing or sneezing).⁹ In high-risk cases, healthcare providers may administer a medication called palivizumab to provide temporary protection against severe RSC in infants and children at increased risk. RSC is highly contagious and can be transmitted when infected individuals cough or sneeze, releasing virus-containing droplets into the air. Being within six feet of an infected person puts a person at risk of the virus entering the body through the eyes, nose, or mouth. Some common factors that can increase the risk of RSC include premature birth, young children born with heart or lung conditions, individuals with weakened immune systems due to diseases like cancer or treatments like chemotherapy, children with neuromuscular disorders, such as muscular dystrophy, adults with heart or lung issues, and older adults, particularly those aged 65 years and above.

RSC is a viral infection that primarily affects the respiratory tract. The virus enters the lungs through the nose and throat, damaging cells in the lower respiratory tract, which leads to the symptoms of the illness.¹⁰

Mechanism of Respiratory Syncytial Contagion

RSC infects the target cell via the attachment of the G protein, followed by emulsification of the contagion and host cell membrane intermediated by the F protein, resulting in the release of the genomic RNA into the cytoplasm.¹¹

The most common clinical course encountered in RSC infection is an upper respiratory infection, but RSC generally presents in young children as bronchiolitis, a lower respiratory tract illness with small airway inhibition, and can infrequently progress to pneumonia, respiratory failure, apnoea, and death.¹²

RSC is primarily transmitted through respiratory droplets when an infected person coughs, sneezes, or speaks. The infection involves the following process:

- 1. Contagion shedding:** An infected person sheds the contagion from the respiratory tract, similar to saliva, mucus, and nasal discharge. This can be before they show symptoms.
- 2. Inhalation or communication:** Susceptible individuals can become infected by inhaling respiratory droplets containing the contagion or by touching objects contaminated with the virus and then touching their mouth, nose, or eyes.

3. **Attachment and entry:** Once the contagion enters the respiratory tract of a susceptible individual, it attaches to the cells lining the airways. RSC has specialised proteins (F and G proteins) that facilitate this attachment and entry into host cells.¹³
4. **Replication:** RSC enters the host cells, where it replicates and multiplies. This replication process damages the host cells and can lead to inflammation in the respiratory tract.
5. **Symptom development:** As the infection progresses, symptoms like fever, cough, watery nose, and difficulty breathing can occur, especially in babies, young children, and aged grown-ups.
6. **Spread to others:** Infected individuals can continue to discharge the contagion for several days after symptoms have appeared. This makes them contagious to others.

Infective Agent

RSC is distantly related to measles contagion. RSC viral strains can be classified into two groups, A and B.

Bronchiolitis occurs as a result of the inflammation of the epithelial cells of the small airways in the lungs causing mucus production, inflammation and cellular necrosis of those cells. It is the inflammation of these cells that can obstruct the airway and eventually affect breathing.¹⁴

Symptoms and Signs of Respiratory Syncytial Contagion

RSC infection can cause symptoms similar to common cold or flu. Common signs and symptoms include a watery or stuffy nose, a dry or productive cough, frequent sneezing, a low-grade fever, sore throat, heaving (in some cases), rapid breathing, and difficulty in breathing. RSC can sometimes lead to secondary infections.¹⁵

It causes irritability, especially in babies and immature children. They may become fussy or irritable and may feed less than usual. It is important to note that RSC can range from mild to severe, especially in babies, aged grown-ups, and individuals with weakened vulnerable systems. Severe cases can lead to bronchiolitis or pneumonia. However, particularly if there are signs of severe respiratory torture, it is judicious to seek medical care incontinently, if someone has symptoms of RSC.¹⁶

Symptoms of Respiratory Syncytial Contagion According to the Age Groups

Symptoms of RSC in Babies

These include irritability, reduced appetite, limited interest in conditioning, and altered breathing patterns. Hospitalisation may be warranted for monitoring if they have underpinning health issues. These symptoms are

subjected to children under 6 months.¹⁷

Symptoms of RSC in Toddlers

These include watery nose, coughing and sneezing, reduced eating and drinking, decreased interest in play, swallowing difficulties, and rapid breathing.

Severe Symptoms in Babies and Toddlers (Need to Seek Immediate Medical Attention)

These include noisy breathing, flaring nostrils with each breath, bluish or grey colour around lips, mouth, and fingernails, belly breathing or casket “caving in” like an inverted “V” shape, and abnormal breathing patterns (shallow or breaking).¹⁸

Symptoms of RSC in Children Over 5 Years and Grown-ups

Children and grown-ups may have no symptoms or veritably mild ones, including mild cold-like symptoms similar to a watery nose, headache, sore throat, cough, fatigue, and sometimes a fever.¹⁹ It is pivotal to seek medical attention for severe symptoms in babies and toddlers, while older children and grown-ups generally experience milder symptoms suggesting a common cold wave.²⁰

Diagnosis and Test

Diagnosis of RSC

The process of diagnosing RSC begins with a physical examination that often involves listening to the patient’s lungs using a stethoscope to detect abnormal sounds like wheezing.

Swab tests can be performed to detect the virus, involving the collection of mucus from the nose or mouth. Blood samples may also be taken to check for infection indicators.

In cases of suspected severe illness, additional blood, urine, or imaging tests like X-rays and CT scans may be ordered to assess lung conditions. To confirm RSC and rule out other respiratory illnesses such as the common cold, flu, or COVID-19, antigen (rapid) tests or PCR tests are conducted. For at-home testing, the FDA has authorised a Labcorp kit for swabbing the nose and sending the sample for PCR analysis to determine RSV, COVID-19, or flu.

Common methods for RSC diagnosis include clinical assessment, where symptoms and medical history are evaluated. Nasal or throat swabs are often used, particularly in infants and young children. In severe cases, a nasopharyngeal aspirate may be collected, especially in hospitalised infants. PCR tests are highly sensitive and specific for detecting RSC genetic material, offering rapid and accurate results. Rapid antigen tests can also detect viral proteins but may be less sensitive. Chest X-rays may be performed to assess lung health in severe cases or when complications like pneumonia are suspected.²¹

Duration

The duration of RSC infection can vary from person to person, but it typically lasts for 1 to 2 weeks. Symptoms may include coughing, congestion, fever, and difficulty breathing, especially in young children and older adults. It is important to consult a healthcare professional for a proper diagnosis and treatment if an RSV infection is suspected.

Prognosis

In the majority of cases, an RSC infection typically resolves on its own within about a week. However, it is important to note that RSC can pose serious risks, especially for infants and older adults.²² Approximately one to two out of every 100 children under the age of 6 months with RSC may require hospitalisation. Fortunately, most of these cases can be effectively managed with supportive care, such as providing oxygen and IV fluids. After a few days of treatment, many patients can safely return home, as advised by the CDC.

Treatment and Medication for Respiratory Syncytial Contagion

- RSC infection primarily affects the respiratory tract, constantly causing symptoms similar to a common cold surge or flu. There is no specific antiviral medicine for RSC. Treatment generally focuses on relieving symptoms based on the general guidelines for managing RSV infection.
- Supportive care: The affected individual must get sufficient rest and should stay hydrated. This is especially important for babies and immature children.
- Use humidifiers: Using a humidifier in the room can help relieve congestion and cough.
- Nasal saline drops: For babies, nasal saline drops can be used to help clear the nasal tract.
- Fever management: Over-the-counter fever reducers like acetaminophen and ibuprofen can be used as directed to reduce fever and discomfort.
- Antibiotics: RSC is a viral infection, so antibiotics may not be effective unless there is a secondary bacterial infection.²³
- Hospitalisation: In severe cases, especially in babies and immature children, hospitalisation may be necessary for oxygen therapy and supportive care.
- Taking over-the-counter (OTC) specifics like acetaminophen or ibuprofen (to treat fever or pain): Aspirin should not be administered to a child as a fever remedy. Before taking any untoward cold surge specifics, especially before giving it to a child, it should be discussed with the doctor to make sure it is safe.²⁴

Non-Pharmacological Treatment

Mild RSC symptoms are similar to the common cold surge and do not need treatment from a healthcare provider. RSC generally goes down on its own within one to two weeks. At-home treatment for mild RSC could include the following:

- Drinking fluids to stay hydrated and eating regularly if the person has a low appetite
- Not smoking tobacco products or vaping
- Using a cool mist vapouriser to soothe dry airways if recommended by a doctor.
- Blowing the nose in a handkerchief to keep airways open or gently suctioning excess mucus out of the child's nose²⁵
- Getting plenty of rest

Treatment for Severe Cases

- Getting oxygen using a mask, nasal tongs or a breathing machine (ventilator)
- Getting IV fluids into the body
- Removing excess mucus from the respiratory system through the insertion of a narrow tube into the lungs to effectively cleanse the airways
- Taking specifics like antivirals to help the body fight the contagion
- Possibility of returning home of a majority of children with RSC in a few days, and need to stay in a medical facility for around 3% of the children²⁶

Palivizumab in Respiratory Syncytial Contagion

Palivizumab (a monoclonal antibody) is often preferred for high-risk infants. Palivizumab (SYNAGIS®) functions as a preventative measure against severe RSC by offering passive immunity. When administered via monthly injections during the RSC season, it provides specific antibodies against RSC to infants and children at high risk. These antibodies effectively neutralise RSC, reducing the severity of the infection if they are exposed to the virus. However, it is important to note that palivizumab does not cure RSC and is not used for treating already-infected children; rather, it helps shield them from severe complications associated with the virus. A healthcare provider should be consulted before administering palivizumab to children.²⁷

Mechanism of Action of Palivizumab

Its mechanism of action involves binding to the RSC F (fusion) protein.

Binding of RSC protein: Palivizumab specifically targets the RSC F protein, which is critical for the virus's ability to

enter and infect host cells.

Inhibition of fusions: By binding to the F protein, palivizumab prevents the virus from undergoing a crucial step called fusion. RSC needs to fuse with the host cell membrane to enter and replicate within the cell.

Neutralisation: Palivizumab effectively neutralises RSC, preventing it from entering and infecting respiratory cells in the lungs. This reduces the severity of RSV infection and lowers the risk of severe respiratory illness in high-risk individuals.

It is important to note that palivizumab is not a treatment for RSC infection but rather a preventive measure. It provides passive immunity against RSC, helping to protect vulnerable individuals during the RSC season.

Complications of Palivizumab

Injection site reactions: Mild redness, swelling, or pain can occur at the injection site.

Allergic reactions: Rarely, severe allergic reactions may happen. Signs may include difficulty breathing, swelling of the face or throat, hives, or itching.

Fever: Some infants may develop a low-grade fever after receiving palivizumab.

Long-term efficacy: The effectiveness of palivizumab decreases over time, so it needs to be administered regularly during the RSC season.

Ribavirin

Ribavirin has been used as a treatment for RSC infection in some cases, particularly in severe or high-risk patients, such as infants or those with compromised immune systems. Ribavirin is typically administered via inhalation in a controlled environment due to potential side effects and safety concerns associated with its use.²⁸

Mechanism of Action

Inhibition of viral RNA synthesis: Ribavirin can interfere with the replication of RSV by inhibiting the synthesis of viral RNA. It can be incorporated into the growing viral RNA chains, causing mutations and preventing the virus from replicating effectively.²⁹

Immunomodulatory effects: Ribavirin may modulate the host's immune response to RSV infection. It can influence the production of certain cytokines and chemokines, which play a role in the immune response to viral infections.

Inhibition of viral mRNA capping: Ribavirin may disrupt the process of capping viral mRNA, which is essential for viral protein synthesis. This interference can inhibit viral protein production and impair the virus's ability to propagate.

Complications of Ribavirin

Haemolytic anaemia: One of the most significant complications of ribavirin therapy is haemolytic anaemia, which can cause a breakdown of red blood cells. This can lead to symptoms like fatigue, pallor, and shortness of breath.

Respiratory distress: Ribavirin can cause or exacerbate respiratory distress in some patients, which can be particularly concerning in individuals with severe RSV infections. This can result in worsened breathing difficulties.²⁹

Teratogenicity: Ribavirin is known to be teratogenic, meaning it can harm a developing foetus if used during pregnancy. Therefore, its use is contraindicated in pregnant women or those planning to become pregnant.

Concentration-dependent toxicity: Ribavirin has a narrow therapeutic window, meaning that achieving the right concentration in the bloodstream is crucial for its effectiveness. Too little or too much of the drug can lead to treatment failure or toxicity.

Other side effects: Ribavirin may also cause side effects like nausea, vomiting, headache, and rash.

Incubation Period

The incubation period for RSC can vary from person to person, but it typically ranges from 2 to 8 days. It can depend on various factors, including the individual's age and overall health. If someone has been exposed to RSC and is showing symptoms, it is important to seek medical advice for proper diagnosis and treatment.

Complications of Respiratory Syncytial Contagion

Bronchiolitis: Bronchiolitis is a respiratory infection that predominantly impacts babies and young kids and is usually caused by viruses like RSC. It involves inflammation and congestion of the small airways in the lungs called bronchioles.

Pneumonia: Pneumonia is a medical condition characterised by inflammation of air sacs in one or both lungs, which can become filled with pus or other fluids. It is usually caused by bacterial, fungal or viral infection. Its symptoms encompass elevated body temperature, intense coughing and challenges in breathing.

Croup: Croup is a respiratory condition primarily seen in young children, typically between the ages of 6 months and 3 years. It is characterised by inflammation and narrowing of the upper airway, which includes the windpipe (trachea) and vocal cords. The most common cause of croup is viral infection often parainfluenza virus.

Ear infections: Children with RSV infection may develop

ear infections, known as otitis media.

Asthma exacerbation: RSV infection can trigger asthma symptoms in individuals with pre-existing asthma, leading to worsening of wheezing and shortness of breath.

Hospitalisation: Severe RSV infections can require hospitalisation, especially in infants and young children. Hospitalisation may be required in cases where oxygen therapy and supportive care are necessary.

Respiratory failure: Respiratory failure is a serious medical condition where the respiratory system, which includes the lungs and other parts responsible for breathing, fails to provide adequate oxygen to the body's organs and tissues and to effectively remove carbon dioxide, a waste product, from the body. This can lead to a dangerous imbalance in oxygen and carbon dioxide levels in the blood.³⁰

Secondary infections: RSC can weaken the immune system, making individuals more susceptible to secondary bacterial infections, such as bacterial pneumonia or sinusitis.

Apnoea: Apnoea refers to the temporary cessation or pause in breathing. It can occur during sleep (sleep apnoea - a common condition where a person's breathing repeatedly stops and starts while they are asleep) or while an individual is awake (apnoea). This interruption in breathing can be due to various factors, including the relaxation of throat muscles, blockage of the airway, or issues with the brain's respiratory control centres. This can be especially concerning in premature babies.

Long-term effects: Some research suggests that severe RSC infections in early childhood may be associated with an increased risk of developing asthma later in life.³¹

Prevention and Control of Respiratory Syncytial Contagion

Hand hygiene: Frequent hand washing with soap and water for at least 20 seconds can help prevent the spread of RSC, as the virus can survive on surfaces for hours.

Avoid close contact: Close contact with individuals who have respiratory infections, especially infants and elderly individuals, should be avoided. Protective wearing must be worn during the meeting with patients under unavoidable circumstances.

Good respiratory hygiene: Proper respiratory etiquette, such as covering the mouth and nose with a tissue or elbow when coughing or sneezing, should be encouraged.

Vaccination: While there is no specific vaccine for RSC, a preventive medication called palivizumab is available for high-risk infants, such as premature babies or those with certain health conditions. A healthcare provider should be consulted for guidance.

Isolation: Infants and individuals with RSC should be

isolated to prevent the virus from spreading within households or healthcare facilities.³²

Surface cleaning: Frequently touched surfaces and objects should be regularly cleaned and disinfected, especially in daycare centres and healthcare settings. Proper precautions must be taken during the sterilisation of fomites.

Respiratory equipment: Proper cleaning and disinfection of respiratory equipment, like nebulisers, should be ensured to prevent RSC transmission.

Avoid crowded places: During RSC outbreaks, it is advisable to avoid crowded places, especially for high-risk individuals.

Good health practices: Maintaining overall good health through a balanced diet, regular exercise, and adequate sleep can help strengthen the immune system.

Antiviral medications: In some cases, antiviral medications like ribavirin may be used to treat severe RSC infections, but they are not commonly recommended.

Preventing RSC is particularly important for infants and young children, as severe cases can lead to bronchiolitis and pneumonia.³³

Conclusion

This review provides comprehensive information on the history, causes, mechanism, symptoms, duration, treatment, incubation, complications, and prevention of RSC. RSC is a highly contagious infection that primarily affects young children and the elderly. It is crucial to emphasise the importance of prevention through vaccination and proper hygiene practices as it can lead to severe respiratory illnesses. Additionally, ongoing research and development of antiviral treatments are vital to mitigate its impact on public health. While progress has been made in understanding and managing it, further research and public health efforts are essential to reduce its burden and protect those at maximum risk.

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