Respiratory syncytial virus: Common yet unknown

Adapted from 'Respiratory syncytial virus: Common yet unknown' by Michelle Roberts, Natalya Vassilouthis, Dina AbouElwafa[1]

Respiratory syncytial virus

A common respiratory pathogen causing respiratory illnesses in infants and young children[2]

Most susceptible population[2]

Early years of life
especially **infants <12 months**

High-risk groups[3]

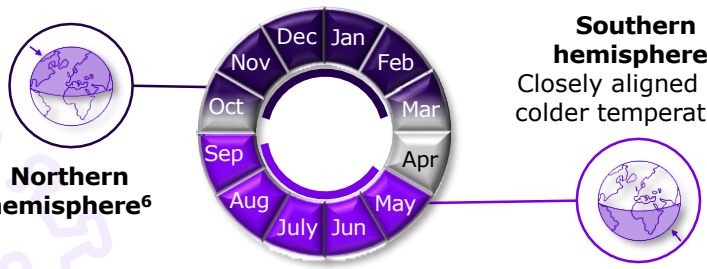
Prematurely born infants
Infants with congenital heart disease/ chronic lung disease/ low birth weight

Nearly 70% of infants will be infected with RSV in their first year of life **and nearly all children (90%)** are infected within the first two years[4,5]

Seasonality and predictable epidemics

Temperate climates[6]

Consistent seasonality with most countries experiencing a peak in RSV cases in winter



Northern hemisphere[6]

Southern hemisphere[6]
Closely aligned with colder temperatures

Subtropical climates[6]

Seasonality of RSV is **less consistent**
Peak closely aligned with rainy season and/or higher temperatures

Understanding of RSV epidemics is important to ensure the **optimal timing of prevention and control measures**

Modes of transmission[2]

Nasopharyngeal or conjunctival mucosa with respiratory secretions

Incubation period and viral shedding[2,7]

Incubation: 2-8 days

Shedding: up to 3 weeks

Mean R_0 **4.5**

Factors affecting severity[3]

Birth during winter months

Exposure to tobacco smoke

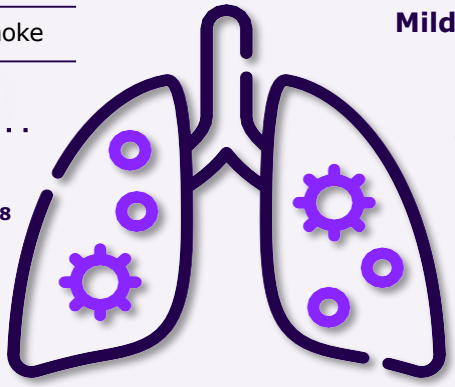
Malnutrition

Clinical manifestations[2]

Mild URTI: blocked, runny nose, sneezing

LRTI: cough, laboured breathing

Up to 40% of infants infected with RSV develop LRTI such as **bronchiolitis** and **pneumonia** with an initial episode[4,5]



Bronchiolitis[8]

50-90%
of hospitalisations for bronchiolitis in infants are RSV related

Pneumonia[8]

5-40%
of hospitalisations for pneumonia in children are RSV related

Manifestations **can vary widely in severity** depending on the **age, comorbidities, environmental exposures**, and the **history of previous infections**[2]

sanofi

SANOFI BELGIUM MAT-BE-2300223 03/2023

RSV - a leading cause of hospitalization in infants and young children [9,10]

The majority of hospitalised babies
are **born at term** and have **no pre-existing medical conditions**[3]

Mid - long term complications

Plausible association with childhood asthma[11]
22X higher at 13 months follow-up
5X higher at 13 years follow-up

Recurrent wheezing[11]
For children with history of RSV **Up to 3X higher** than children with no history of RSV

Reduced pulmonary function[3]

Abbreviations

ARI: acute respiratory infection; GP: general practitioners; IV: intravenous; LRTI: lower respiratory tract infection; OTC: over the counter; R_0: basic reproduction number/rate; RSV: respiratory syncytial virus; URTI: upper respiratory tract infection.

References

1. Michelle Roberts, Natalya Vassilouthis, Dina AbouElwafa. Respiratory syncytial virus: Common yet unknown. Available at: Nature News. https://www.nature.com/articles/d42473-022-00483-6.
2. Piedimonte G, Perez MK. Respiratory syncytial virus infection and bronchiolitis [published correction appears in Pediatr Rev. 2015 Feb;36(2):85]. *Pediatr Rev*. 2014;35(12):519-530.
3. Murray J, Bottle A, Sharland M, et al. Risk factors for hospital admission with RSV bronchiolitis in England: a population-based birth cohort study. *PLoS One*. 2014;9(2):e89186.
4. Esposito S, Abu Raya B, Baraldi E, et al. RSV Prevention in All Infants: Which Is the Most Preferable Strategy?. *Front Immunol*. 2022;13:880368.
5. Glezen WP, Taber LH, Frank AL, Kasel JA. Risk of primary infection and reinfection with respiratory syncytial virus. *Am J Dis Child*. 1986;140(6):543-546.
6. Staadegaard L, Caini S, Wangchuk S, et al. Defining the seasonality of respiratory syncytial virus around the world: National and subnational surveillance data from 12 countries. *Influenza Other Respir Viruses.*2021;15(6):732-741.
7. Reis J, Shaman J. Simulation of four respiratory viruses and inference of epidemiological parameters. *Infect Dis Model.* 2018;3:23-34.
8. Hall CB. Respiratory syncytial virus and parainfluenza virus. *N Engl J Med*. 2001;344(25):1917-1928.
9. Taylor S, Taylor RJ, Lustig RL, et al. Modelling estimates of the burden of respiratory syncytial virus infection in children in the UK. *BMJ Open*. 2016;6(6):e009337.
10. Demont C, Petrica N, Bardoulat I, et al. Economic and disease burden of RSV-associated hospitalizations in young children in France, from 2010 through 2018. *BMC Infect Dis*. 2021;21(1):730.
11. Fusco F, Hocking L, Stockwell S, et al. The Burden of Respiratory Syncytial Virus: Understanding Impacts on the NHS, Society and Economy. Rand Health Q. 2022;10(1):2.