Disease burden of an RSV infection in young children in primary care in the Netherlands: period October 2020 – September 2021

Results RSV ComNet II-study: the Netherlands

Jojanneke van Summeren

Adam Meijer

Youri Moleman

Janneke Hendriksen

Joke Korevaar

Lisa Wijsman

Gabriel Goderski

Mariette Hooiveld

John Paget

NIVEL
Research for better care

National Institute for Public Health and the Environment
Ministry of Health, Welfare and Sport

Preface

This is the short version of the report on the results of the RSV ComNet II study conducted in the Netherlands in the period October 2020 to September 2021. The RSV ComNet study is an international study to assess the disease burden of RSV infection in young children in primary care. Data collection takes place in several European countries, namely in Italy, Spain, England, the Netherlands and Belgium. This report is a short summary of the original report published in Dutch "Ziektelast van een RS-virusinfectie bij jonge kinderen in de huisartsenpraktijk: oktober 2020-september 2021". The results reported in this report can be used as first publication for mapping the burden of disease of an RSV infection in young children in Dutch general practice. Follow-up research, with more participants, is necessary to map the burden of disease with sufficient reliability.

The authors

Jojanneke van Summeren[1]*,
Adam Meijer[2]*,
Youri Moleman[1],
Janneke Hendriksen[1],
Joke Korevaar[1],
Lisa Wijsman[2],
Gabriel Goderski[2],
Mariette Hooiveld[1],
John Paget[1]

1 Netherlands Institute for Health Services Research (Nivel), Utrecht
2 National Institute for Public Health and the Environment (RIVM), Bilthoven
* Shared first authorship

Extended summary

In the winter young children often have respiratory symptoms caused by the respiratory syncytial virus (RSV). Most children have only mild respiratory symptoms, but some children have more severe symptoms like shortness of breath or having trouble drinking and are therefore admitted to the hospital. New candidate vaccines and monoclonal antibodies are in late stage clinical development. Understanding the disease burden of RSV infections in young children is therefore important. In particular, there is a lack of knowledge about the burden of disease in young children in primary care.

The RSV ComNet study

The objective of the RSV ComNet study is to measure the clinical burden and societal impact of an RSV infection in young children (aged <5 years) in primary care. In addition, we want to examine whether the disease burden differs between children with a mono RSV infection and children with an RSV infection and another respiratory virus (coinfection).

General practitioners (GPs) participating in the sentinel respiratory surveillance (in Dutch: Nivel Peilstations huisartsen) collected random samples from patients with symptoms of an acute respiratory infection (ARI) or influenza like illness (ILI). These samples were tested by the RIVM for RSV, as well as for other respiratory viruses. Parents of children younger than five years who tested positive for RSV were invited by their GP to complete to follow-up questionnaires, the first questionnaire after approximately 14 days and the second one after approximately 30 days. The questionnaires included questions about healthcare and medication use for the RSV infection, number of days of illness, respiratory symptoms, and the relevant medical history. In addition, the GPs completed a short questionnaire on the respiratory symptoms the child was having on the day the sample was collected.

Key findings

- No RSV was observed during the winter period 2020/2021.
- There was an RSV epidemic in summer and fall of 2021.
- 17 of the 35 parents who had a RSV positive child (<5 years) gave informed consent to participate in the RSV ComNet II study in the Netherlands
- **Coughing, fever and nose complaints** are the most prevalent symptoms in children in primary care at baseline.
- Children with an **RSV infection and a coinfection** seem to **maintain symptoms longer** than children with an RSV infection alone.
- Parents reported that their children were **sick for 9 days** (median).
- **Healthcare use and medication use** was highest **in the first 14 days** after the consultation in which RSV was diagnosed.
- **13 of the 17 children visited** the GP **a second time** during this period because of the RS virus infection.
- **9 of the 17 children were on medication**, including antibiotics, paracetamol and cough syrup.
- To compare the health care and medication use between children with a mono RSV infection and RSV and a respiratory virus coinfection, more participants are needed.
- To compare the health care and medication use between children with an mono RSV infection and RSV and another respiratory virus infection, more participants are needed.

- **14 of 17 children** returned to **usual health status** after 14 days.
- For 11 of the 17 children, at least one of the parents took at least 1 day of leave from work.

Conclusions

The results in this report describe the disease burden of an RS virus infection in young children in primary care in the Netherlands. A direct consequence of conducting the study during the COVID-19 pandemic is that there was an RSV epidemic outside the normal RSV winter season. In addition, the COVID-19 pandemic may have affected healthcare utilization. Due to fear of a COVID-19 infection and news coverage about an overloaded health care system, people were more reluctant to visit for example the GP. Future research, including more participants, are needed to assess the disease burden of RSV in primary care with sufficient reliability.

Figures and tables

The following Figures and Tables are translated from the original report published in Dutch.

1.1 Recruitment of participants

Figure 1 Data collection RSV ComNet Study via the respiratory surveillance in children <5 year of age
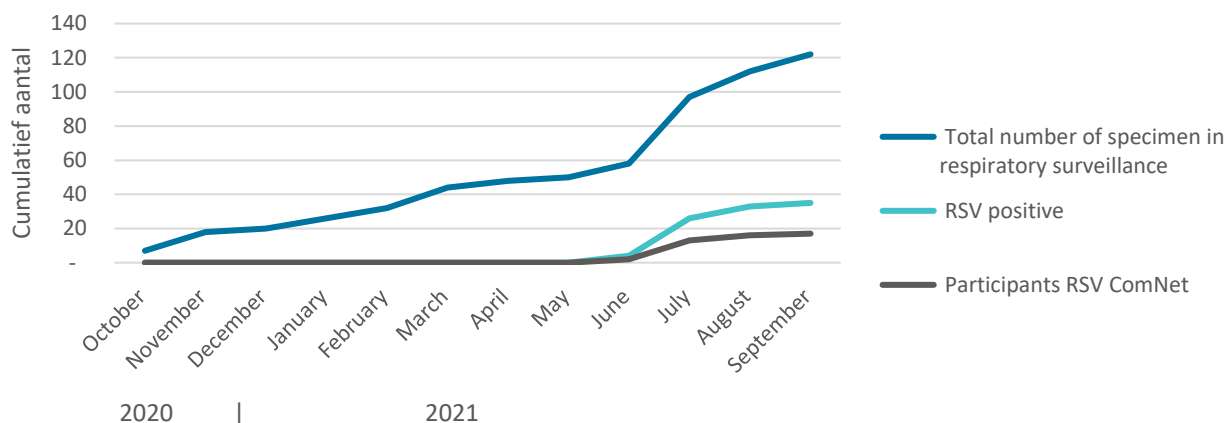
1.2 What are the key characteristics of the 17 participants?

Table 1 Demographic characteristics and laboratory results of children (aged < 5 years) with an RSV infection in the Netherlands, October 2020 to September 2021

	Mono RSV infection (n=8)	RSV & coinfection (n=9)1
Boy (n, %)	6 (75%)	7 (78%)
Age in months (median, IQR)	15 (11-27)	18 (6-22)
Medical history		
Malnutrition	1	1
Premature	0	1
Chronic respiratory disease	0	0
Immunodeficiency	0	0
Other chronic disease	1	1
Laboratory results		
RSV type A	8	8
RSV type B	0	1

[1] Four children have a coinfection with enterovirus of whom one also with a rhinovirus. Two children have a coinfection with SARS-CoV-2 of whom one with also a rhinovirus. Three children have a coinfection with a human coronavirus (HCov-229E), a parainfluenza virus and a human metapneumovirus, respectively. IQR = Inter Quartile Range

1.3   What are the symptoms of children with an RSV infection in primary care?

Table 2 Symptoms of children with an RSV infection in primary care on the day of sampling and 14 and 30 days after sampling. Symptoms are shown for children with a mono RSV infection and with RSV and a respiratory coinfection(s).

Symptomen	Baseline		Day 14 questionnaire		Day 30 questionnaire	
	Mono RSV infection (n=8)	RSV & coinfection (n=9)	Mono RSV infection (n=8)	RSV & coinfection (n=9)	Mono RSV infection (n=4)	RSV & coinfection (n=8)
Cough (n)	8	8	0	9	0	3
Fever (n)	8	6	1	0	0	0
Rhinorrhoea (n)	5	5	2	5	0	3
Sore throat (n)	4	2	0	0	0	0
Shortness of breath (n)	3	2	0	0	0	2
Malnutrition (n)*	*	*	0	4	0	0
Wheezing in chest (n)*	*	*	0	1	0	1

* Data on malnutrition and shortness of breath are not collected at baseline.

1.4   What is the healthcare and medication use of children with an RSV infection in primary care?

Table 3 Healthcare and medication use of children with an RSV infection in primary care. Data are shown for children with a mono RSV infection and RSV and a coinfection.

Healthcare use	Day-14 questionnaire		Total period (30 days)[2]	
	Mono RSV infection (n=8)	RSV & coinfection (n=9)	Mono RSV infection (n=8)	RSV & coinfection (n=9)
GP consultation (median, IQR)				
Regular consultation	2 (2-2,5)	2 (1-3)	3 (2-3)	2 (1-3)
By phone or e-mail	1 (0,5-1,5)	1 (0-2)	1 (0,5-2)	1 (0-2)
Emergency department (n)	1	0	2	0
Consultation pediatrician (n)	1	0	1	0
Hospital admission (n)	0	0	0	0
Medication use				
Paracetamol (n)	2	1	2	1
Antibiotics (n)	3	1	3	1
Other medication[1] (n)	3	2	3	2

[1] Medication including nasal spray, cough syrup and discs/inhalers. [2]Five parents have not responded to the day-30 questionnaire. For those children we have assumed that there was no healthcare or medication use in the period between

14 and 30 days after sampling. This might have caused a small bias in the counts and medians over the total period. IQR = Inter Quartile Range

1.5 What is the societal impact of an RSV infection in young children in primary care?

Table 4 Societal impact of an RSV infection in children under 5 years of age who consulted their GP. Results are grouped by children with a mono RSV infection and an RSV and a coinfection with another respiratory virus.

	First 14 days		between day 14 & day 30		Total period (30 days)[2]	
	Mono RSV infection (n=8)	RSV & coinfection (n=9)	Mono RSV infection (n=4)	RSV & coinfection (n=8)	Mono RSV infection (n=8)	RSV & coinfection (n=9)
Days of illness (median, IQR)	7 (5-7)	7 (7-12)	3 (1-7)	0,5 (0-3,5)	8 (6-13)	12 (7-15)
Days of absence to daycare or school (median, IQR)	1,5 (1-2)	2 (1-3)	1,5 (0,5-1,5)	0 (0-0)	2,5 (1-4)	2 (1-3)
Absence of work parents (n)[1]	5	6	1	1	5	6
If yes, number of days (median, IQR)[2]	2 (1-4)	2 (1-2)	3	5	2 (1-7)	2 (1-2)

[1] Number of children whose parents took at least one day of leave from work, [2] Total number of days both parents took leave.[2] Five parents have not responded to the day-30 questionnaire. For those children we have assumed that they were recovered with no societal burden in the period between 14 and 30 days after sampling. This might have caused a small bias in the counts and medians over the total period. IQR = Inter Quartile Range