

The virology annual report is compiled by ESR by collating the data from virology and microbiology laboratories: one public health virology laboratory (ESR) and three hospital virology laboratories (Auckland Labplus, Waikato Hospital and Canterbury Health) and three Microbiology laboratories (Wellington Hospital, Middlemore Hospital and Tauranga PathLab). The virological surveillance is mainly a passive surveillance for hospital inpatients and outpatients during routine viral diagnosis.

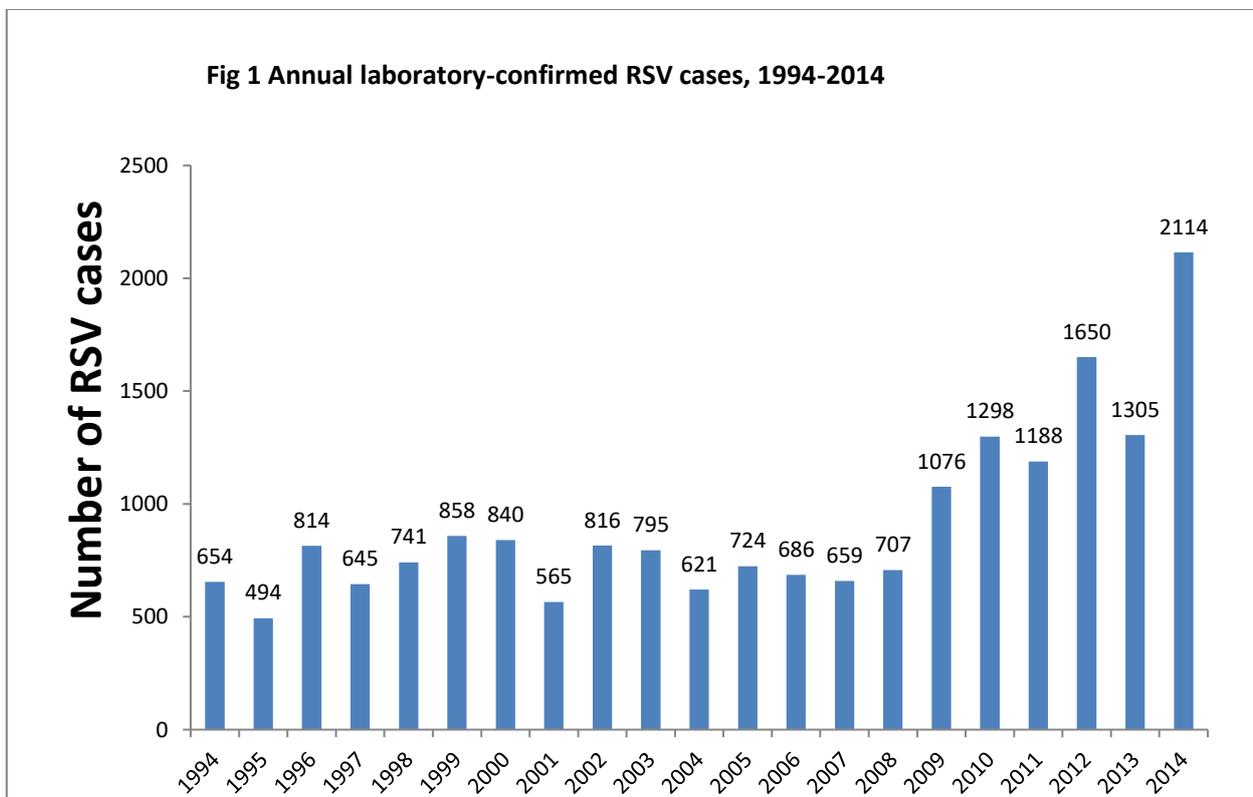
## RESPIRATORY VIRUSES

### *Influenza*

The influenza annual report in 2014 is available at the website:  
[http://www.surv.esr.cri.nz/virology/influenza\\_annual\\_report.php](http://www.surv.esr.cri.nz/virology/influenza_annual_report.php)

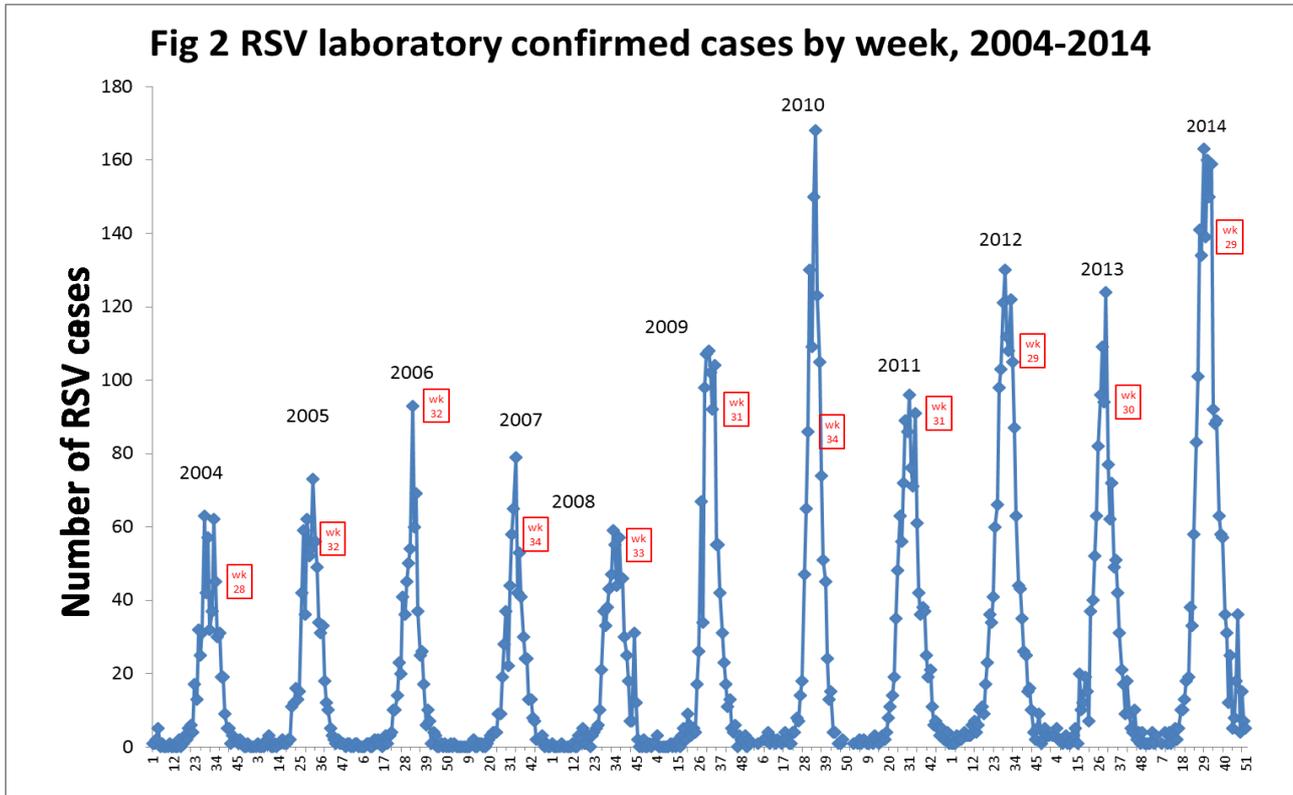
### *Respiratory Syncytial Virus (RSV)*

Based on laboratory-confirmed RSV cases reported to ESR, the RSV activity in 2014 was higher than last year (Figure 1). During January to December 2014, a total of 2114 RSV infections were reported compared with 1305 cases reported during the same period in 2013.



In 2014, the RSV activity started to increase in June and peaked in Week 30 (middle of July), one week earlier than the peak in 2013 (Figure 2). The RSV activity remained high until Week 39 (late September). Since then, the number of RSV cases declined to a baseline level.

**Fig 2 RSV laboratory confirmed cases by week, 2004-2014**



## ENTEROVIRUSES AND ADENOVIRUSES

The New Zealand enterovirus and adenovirus laboratory network comprises five laboratories: one public health virology laboratory (ESR, Wellington) and four hospital virology laboratories in Auckland (ADHB and CMDHB laboratories), Waikato and Christchurch. These five virology laboratories cover 100% of the population and all geographical areas of the country. The enterovirus and adenovirus surveillance is a year-round routine diagnostic surveillance for hospital in-patients and out-patients. Hospital laboratories report all enterovirus and adenovirus detections and/or typing results weekly to ESR and this data is then available nationally. Untyped or untypable enteroviruses and adenoviruses are referred to ESR for further identification.

### *Enteroviruses*

There were a total of 454 enteroviruses reported in 2014, compared with 616 in 2013. A total of 61 (13%) enterovirus viruses were identified by serotyping. Among serotyped enteroviruses, Coxsackievirus Group A type 24 was the most predominant serotype (17, 34%), and followed by Coxsackievirus Group B type 2, (10, 16%), while Coxsackievirus Group A type 6 (69) and Enterovirus Echovirus type 7 (16) were the predominant strains in 2013.

This year, Enterovirus C105 was first time isolated in New Zealand from a patient with mild respiratory symptoms. EV-C105 is a member of the human EV group C species and was first identified in the Democratic Republic of Congo in late 2010 in a faecal sample collected from a fatal acute flaccid paralysis patient during a poliomyelitis outbreak. Due to a lack of sequence data available this virus was initially identified as Enterovirus 109 (EV-109). In 2012, the virus was assigned as EV-C105 because subsequent sequencing showed that it had only 74.7% nucleotide and 82.5% amino acid identity to EV-109, thus satisfying the criteria for assignment of a new enterovirus serotype.

## *Adenoviruses*

There were a total of 842 adenoviruses reported in 2014, lower than 1140 in 2013. Of these, 122 (14%) adenoviruses were identified by serotyping. The predominant serotypes in 2014 were adenovirus type 3 (39, 32%), type 2 (25, 20%) and type 1 (14, 11%).

Adenovirus type 35 has been first time detected in New Zealand. Adenovirus type 35 (HAD-35) Holden strain, belongs to adenovirus subgroup B and has high homology to Ad7, Ad3, Ad21, Ad17, and simian Ad25. HAD35 was first isolated in 1973 from the lungs and kidney of a 61-year old woman who died of diffuse interstitial adenovirus pneumonia 55 days after receiving a cadaveric renal allograft. This unique adenovirus is isolated most frequently from immunosuppressed individuals such as AIDS patients and transplant recipients, and it has a tropism for the urinary tract.

Adenovirus type 56 has also been first time detected in New Zealand and was recently identified as a novel intertypic recombinant adenovirus and has high degree of sequence homologies with Adenovirus type 15 and 29. HAdV-56 had been originally isolated in France in 2008 from the pulmonary biopsy of a 10-day-old neonate who had died because of a fatal respiratory infection, and from the conjunctival swabs of three healthcare workers who cared for the neonate and subsequently developed keratoconjunctivitis. This virus has caused pharyngoconjunctival fever (PCF) and had caused epidemic keratoconjunctivitis (EKC) throughout Japan and other countries.

## MEASLES, MUMPS AND RUBELLA (MMR)

The MMR annual report in 2014 is available in the report “Annual Surveillance Summary 2014” at [http://www.surv.esr.cri.nz/PDF\\_surveillance/AnnualRpt/AnnualSurv/2014/2014AnnualSurvRpt.pdf](http://www.surv.esr.cri.nz/PDF_surveillance/AnnualRpt/AnnualSurv/2014/2014AnnualSurvRpt.pdf)

In summary, viral and mycoplasma pneumoniae infections in New Zealand in 2014 are shown in Table 1. The information is based on weekly data collated from the virology laboratories of Auckland Labplus, Waikato Hospital, Canterbury Health, Wellington Hospital, Middlemore Hospital, Tauranga PathLab and ESR.

Table 1. Summary of viral and Mycoplasma pneumoniae infections in 2014 in New Zealand

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Influenza A*	9	4	2	5	5	37	101	155	64	20	6	7	415
Influenza AH1N1 pdm09*	19	20	39	35	42	231	753	1027	238	10	1	1	2416
Influenza AH3N2*	5	7	6	6	13	20	69	192	347	132	27	18	842
Influenza B*	2	3	4		2	5	24	56	73	48	18	8	243
Influenza B/Victoria lineage*	0	0	0	1	2	0	0	2	2	0	1	0	8
Influenza B/Yamagata	2	0	2	5	5	9	23	89	68	13	4	0	220
Bocavirus	3	5	2	3	4	14	19	27	26	23	8	9	143
Coronavirus	0	5	5	2	11	36	76	54	39	17	8	9	262
Metapneumovirus	2	2	1	7	20	59	215	152	134	60	20	43	715
Mycoplasma pneumoniae	48	33	36	32	38	52	74	34	26	13	13	8	407
Parainfluenza 1	4	2	10	22	51	79	65	35	7	5	3	9	292
Parainfluenza 2	1	0	2	2	1	3	2	6	1	5	6	9	38
Parainfluenza 3	8	1	0	8	4	13	18	30	55	121	77	40	375
Parainfluenza 4	1	0	1	1	0	5	8	4	7	12	4	2	45
Parechovirus	2	0	7	3	1	3	1	1	2	0	0	0	20
Parvovirus	1	0	0	0	0	1	0	0	0	1	0	0	3
Picornavirus	26	24	66	88	69	87	210	133	163	148	124	82	1220
Respiratory Syncytial Virus	9	5	10	32	88	275	737	489	267	109	66	27	2114
Rhinovirus	59	83	95	141	177	240	233	206	216	230	129	119	1928
Rotavirus	28	22	10	13	15	30	76	151	164	113	32	18	672
Varicella Zoster Virus (VZV)	103	67	75	78	64	68	84	75	77	108	80	122	1001
Measles	24	38	38	17	8	11	9	6	0	5	3	0	159
Measles Genotype B3	4	0	0	0	0	0	0	0	0	0	0	0	4
Mumps	2	6	6	3	1	0	2	1	1	1	3	0	26
Rubella	3	0	1	0	0	0	1	0	0	0	0	0	5
Adenovirus	54	46	39	54	54	50	101	106	92	122	61	63	842
Adenovirus Type 1	0	1	0	1	1	0	0	1	3	5	1	1	14
Adenovirus Type 2	0	1	0	2	2	3	2	2	2	6	1	4	25
Adenovirus Type 3	0	6	10	2	2	2	4	1	4	7	1	0	39
Adenovirus Type 4	0	1	0	0	2	0	1	1	1	0	0	0	6
Adenovirus Type 5	0	0	0	0	0	0	1	1	0	1	0	0	3
Adenovirus Type 7	0	0	0	0	1	0	0	0	3	6	3	0	13
Adenovirus Type 8	3	2	1	2	0	1	1	0	0	0	0	0	10
Adenovirus Type 19	1	0	0	0	0	0	0	0	0	0	0	0	1
Adenovirus Type 22	0	0	1	1	0	0	0	0	0	0	0	0	2
Adenovirus Type 29	0	0	0	0	0	0	0	0	0	1	0	0	1
Adenovirus Type 35	0	0	0	0	0	0	1	0	0	0	0	0	1
Adenovirus Type 37	0	0	0	0	0	0	0	0	0	5	1	0	6
Adenovirus Type 56	0	0	0	0	0	1	0	0	0	0	0	0	1
Enterovirus	35	16	30	29	34	37	65	36	63	52	34	23	454
Coxsackievirus A type 6	1	0	0	0	0	0	1	0	0	0	0	0	2
Coxsackievirus A type 9	1	0	0	1	0	0	0	0	0	1	1	0	4
Coxsackievirus A type 14	0	0	0	0	0	0	0	0	0	2	0	0	2
Coxsackievirus A type 16	0	1	0	0	1	1	0	0	0	0	0	0	3
Coxsackievirus A type 21	0	0	0	0	0	0	0	0	0	2	1	0	3
Coxsackievirus A type 24	0	0	4	10	0	0	0	0	0	3	0	0	17
Coxsackievirus B type 2	0	0	0	0	1	2	2	1	0	4	0	0	10
Coxsackievirus B type 4	0	0	0	0	0	0	0	0	2	3	1	0	6
Echovirus type 6	1	0	1	0	0	0	0	0	0	0	0	0	2
Echovirus type 9	1	0	0	0	0	0	0	0	0	0	0	0	1
Echovirus type 25	0	0	0	0	0	0	0	1	0	0	1	0	2
Echovirus type 30	1	0	0	0	0	2	0	0	0	0	0	0	3
Enterovirus type 71	0	1	1	0	1	0	2	0	0	0	0	0	5
Enterovirus type C105	0	1	0	0	0	0	0	0	0	0	0	0	1

\*Note: Viruses designated with an asterisk were reported based on the specimen taken date, whereas other viruses were based on the lab reporting date.