

Respiratory Syncytial Virus (RSV) in Preterm Infants: Epidemiology, Clinical Pattern and Risk Factors in a Pediatric hospital in Argentina

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BACKGROUND AND AIMS

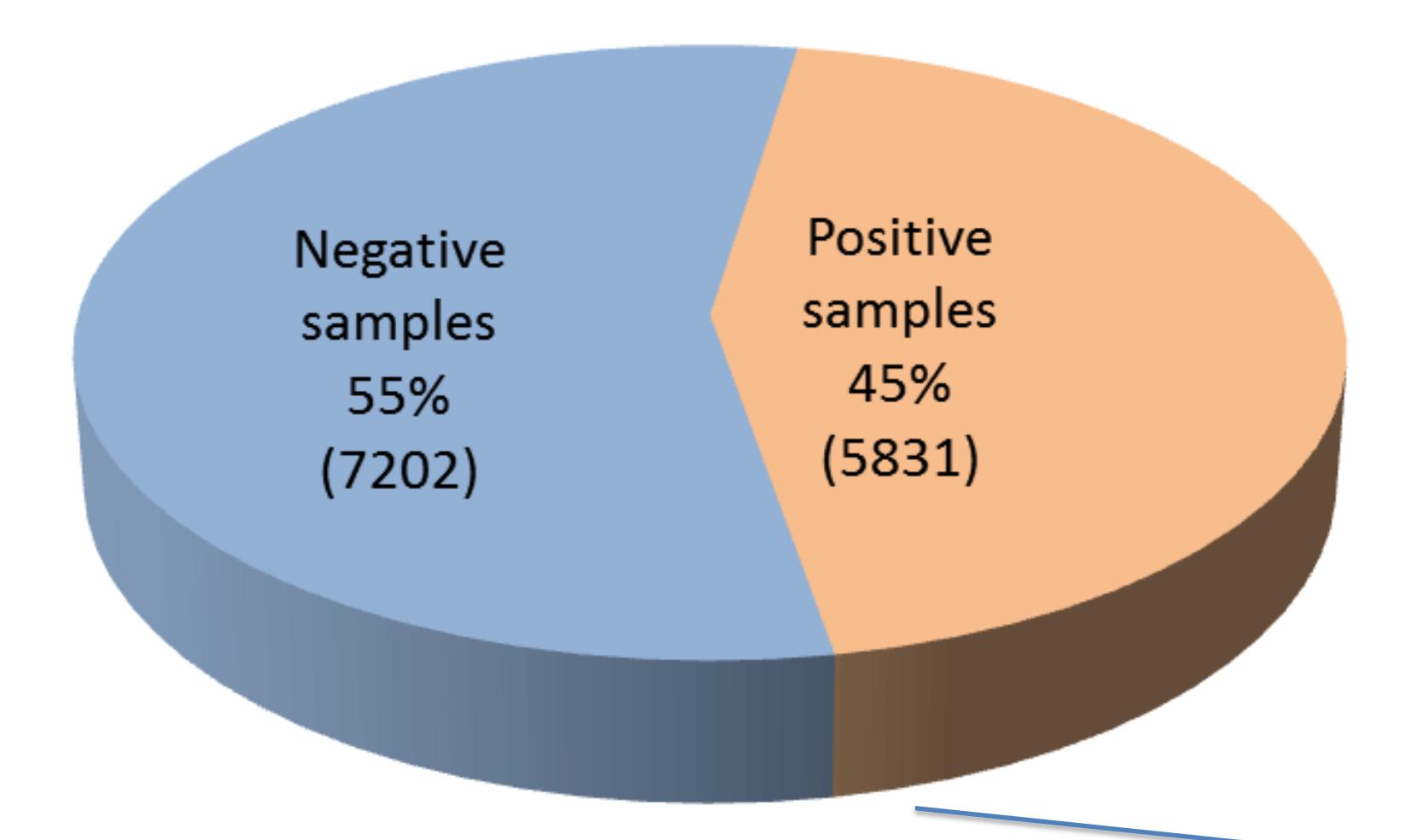
- RSV is the main agent that causes Acute Lower Respiratory Tract Infection (ALRI) in children.
- Preterm infants (PT) present a higher risk of hospitalization and complications associated with RSV infection.
- **The aims of this study were to describe clinical and epidemiological factors associated with RSV infection and to establish independent predictors of lethality in preterm infants.**

MATERIAL AND METHODS

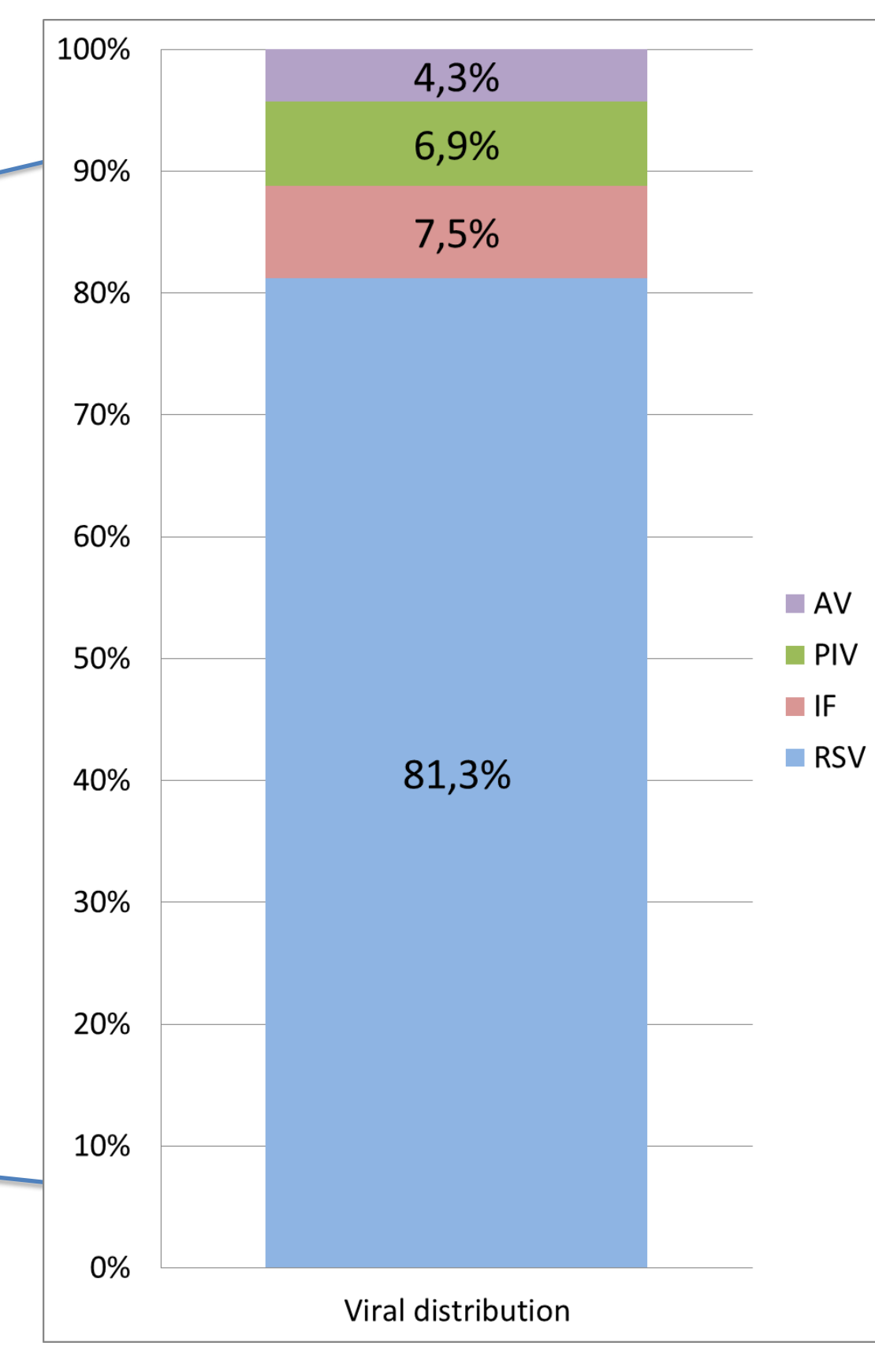
- **Study design:** prospective, cross sectional study of patients admitted for ALRI between 2000 and 2017 at "Ricardo Gutiérrez" Children's Hospital, Buenos Aires, a tertiary pediatric hospital serving the greater metropolitan area.
- **Inclusion criteria:** patients admitted for ALRI.
- **Active epidemiological surveillance** was performed with a specific case report form.
- Sociodemographic variables, comorbidities, clinical presentation and evolution during hospitalization were specified. From 2012 we recorded data on: gestational age, birth weight, pregnancy and perinatal history.
- **Virological diagnosis** of respiratory viruses: RSV, adenovirus (AV), influenza (IV) and parainfluenza (PIV) was made by fluorescent antibody assay of nasopharyngeal aspirates or real time-PCR.
- **Statistic Analysis:** The clinical epidemiological characteristics between PT and full term (FT) cases were described. Adjusted OR was calculated and multiple logistic regression model was used to establish predictors of RSV lethality in PT. Epiinfo 7 was used for data analysis.

POPULATION

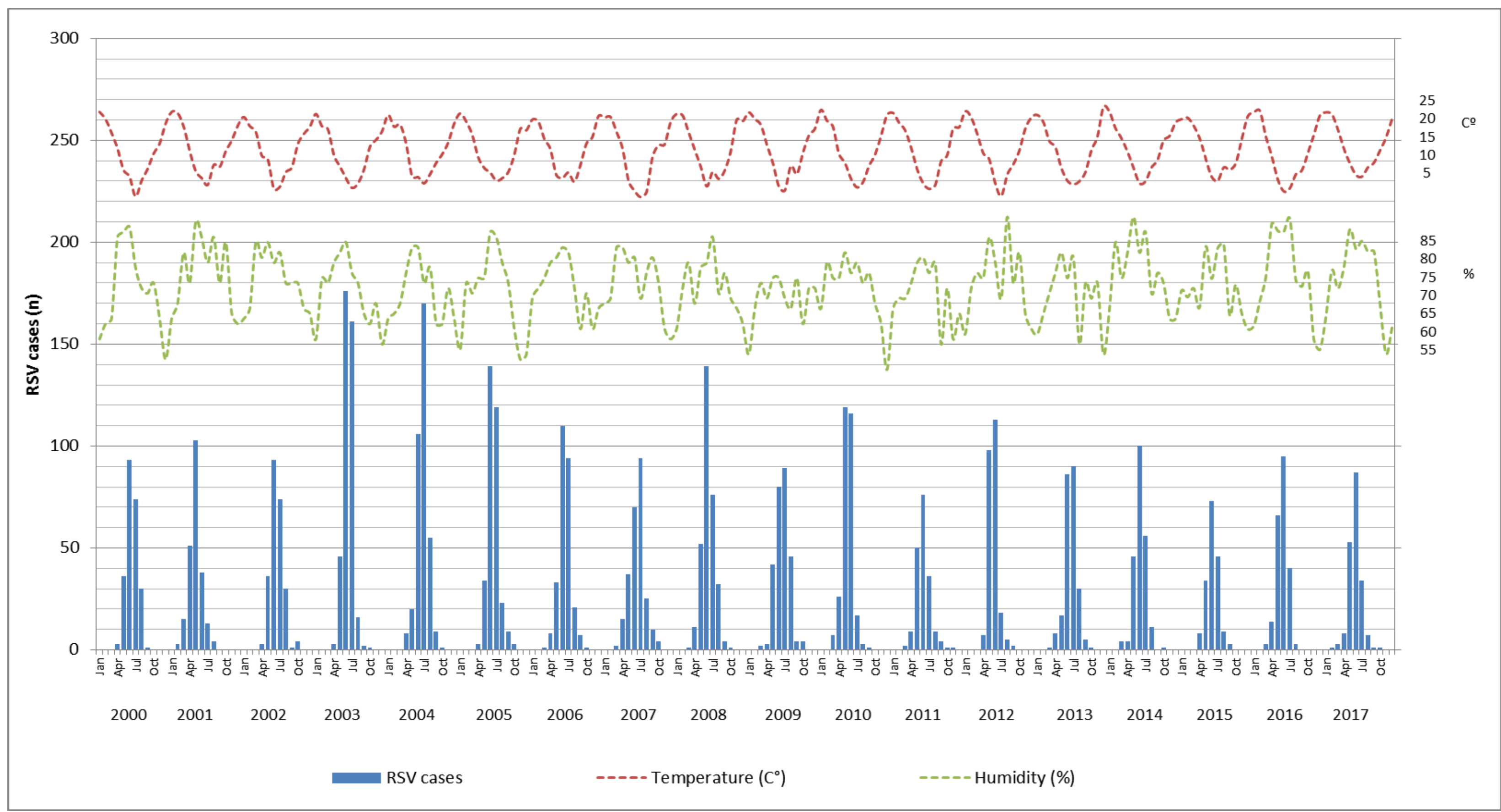
n ALRI=15,451
 n ALRI tested= 13,033 (84.3%)



RSV was predominant (81.3%,4738) all through the study period



RSV Seasonal Pattern (2000-2017). "Ricardo Gutierrez" Children's Hospital.



Epidemiological and clinical features, complications and lethality between preterm (PT) and full term (FT) cases

	Preterm (n=655)	Full term (n=4,083)	OR	IC95%	p	
Gender (male)	58,5%	56.2%	1.1	0.9	1.3	0.274
Age (median, IQR)	7 (4-13)	7 (3-12)				0.3
Bronchiolitis	60.1%	61.4%	0.9	0.8	1.1	0.548
Previous hospitalization (ALRI)	41.7%	23.9%	2.3	1.9	2.7	0.000
Re- admission	4.7%	3.0%	1.6	1.1	2.4	0.020
Perinatal respiratory history	46.6%	5.5%	15.1	12.3	18.5	0.000
Comorbidities	56.3%	38.7%	2.0	1.7	2.4	0.000
Chronic Respiratory Disease	41.4%	28.9%	1.7	1.5	2.1	0.000
Malnourishment	10.1%	3.7%	2.9	2.1	3.9	0.000
Cardiopathy	8.1%	5.6%	1.5	1.1	2.0	0.012
Chronic Neurological Disease	7.5%	3.7%	2.1	1.5	3.0	0.000
Bronchopulmonary Displasia	5.9%	0.1%	128.8	31.0	534.9	0.000
Immunosuppression	1.1%	1.9%	0.5	0.2	1.2	0.114
Length of stay (median, IQR)	8 (5-11)	7 (5-10)				0.000
ICU requirement	10.8%	7.5%	1.5	1.1	2.0	0.004
Nosocomial infection	7.9%	6.0%	1.3	1.0	1.8	0.074
Lethality	3.1%	1.5%	2.0	1.2	3.4	0.005

Clinical features in RSV preterm cases

N=141	%
<28 weeks (extremely preterm)	5.1
28-32 weeks (very preterm)	17.7
32.1-36.6 weeks (moderate to late preterm)	77.2
Birth weight in grams (Median, IQR)	2,067 (1,511-2,500)
Pregnancy control (≥3 controls)	92
High risk pregnancy	46.3
Breast feeding (current or up to 6 months)	38.9
Smoking during pregnancy	11.8
Passive smoking	38.5

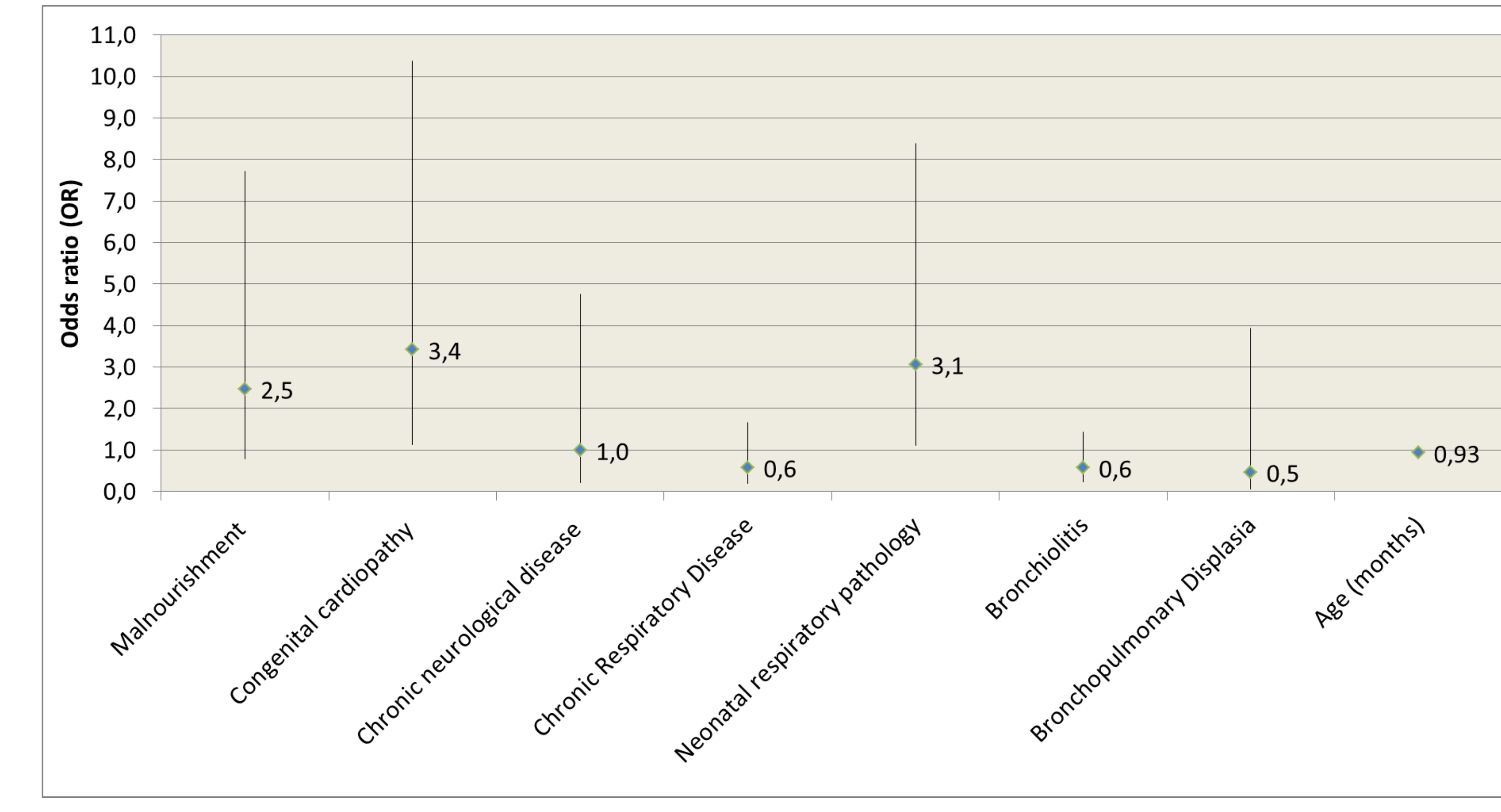
CONCLUSIONS:

- RSV showed an epidemic pattern (May-July) and affected PT with certain comorbidities, with more severe disease, more complications during hospitalization and higher lethality than FT.
- RSV lethality in PT was more associated with congenital cardiopathy and perinatal respiratory history.

Epidemiological and clinical features between fatal and non-fatal cases in preterm cases

	Fatal cases (n=20)	Non fatal cases (n=628)	OR	IC95%	p	
Gender (male)	50%	58.7%	0.07	0.28	1.71	0.430
Age (median, IQR)	4 (2-7.5)	7.5 (4-13)				0.022
Bronchiolitis	45%	60.5%	0.53	0.21	1.30	0.160
Comorbidities	60%	56.4%	1.16	0.46	2.87	0.740
Perinatal respiratory history	70%	46%	2.73	1.07	7.21	0.034
Cardiopathy	25%	7.6%	4.02	1.40	11.5	0.005
Malnourishment	25%	9.4%	3.2	1.1	9.1	0.021
Chronic Respiratory Disease	35%	41.8%	0.74	0.29	1.89	0.530
Bronchopulmonary Displasia	5%	5.9%	0.84	0.10	6.45	0.860
Previous hospitalization (ALRI)	50%	41.6%	1.40	0.57	3.41	0.450
Chronic Neurological Disease	15%	7.3%	1.4	0.31	6.24	0.653

Risk factors associated with RSV lethality in preterm cases. Multivariate Analysis.



Independent predictors for RSV lethality in preterm cases

- ❑ Congenital cardiopathy OR 3.41 (1.12-10.3) p=0.003
- ❑ Perinatal respiratory history OR 3.1 (1.6-6.1) p<0.001