

# Influenza in pregnant women during 3 seasons, between 2013-2016 in Portugal

Patrícia Conde, Paula Cristóvão, Inês Costa, Pedro Pechirra, Raquel Guiomar

Portuguese Influenza Reference Laboratory, Infectious Diseases Department, National Institute of Health Dr. Ricardo Jorge,  
LISBON, PORTUGAL

## Background

Since the 2009 pandemic, pregnant women (PW) have been assumed as a high risk group for increased morbidity and mortality linked to influenza infection. From 2013 to 2016, the Portuguese Influenza Surveillance Programme integrates an obstetric unit network that reports influenza-like illness (ILI) cases and collects nasopharyngeal samples for influenza surveillance and diagnosis. The aim of this study was to characterize cases of influenza infection in pregnant women during 2013-2016 in Portugal.

## Materials and Methods

Between 2013 and 2016, ILI cases in PW were compared with ILI in non pregnant women (NPW), aged between 15 and 44 years. In study period were reported 634 ILI cases (220 ILI in 2013/14, 152 in 2014/15 and 262 in 2015/16) of each 149 in PW. Influenza and other respiratory viruses diagnosis were performed by multiplex RT-PCR. Data regarding symptoms, hospitalization, vaccination and antiviral treatment were recorded.

**Table I** – Confirmed influenza cases in pregnant women (PW) and non pregnant women aged 15-44 (NPW) between 2013 and 2016 seasons.

Seasons		Influenza		A(H1)pdm09	A(H3)	B/Victoria	B/Yamagata
		n/Total	%	%	%	%	%
2013/14	PW	30/52	57.7	80.0	20.0	0	0
	NPW	101/168	60.1	61.4	38.6	0	0
2014/15	PW	14/26	53.8	0	7.1	0	92.9
	NPW	80/126	63.5	5.0	31.3	0	63.8
2015/16	PW	32/71	45.1	96.9	3.1	0	0
	NPW	81/191	42.4	96.3	1.2	1.2	1.2

## Results

- During the overall study period the proportion of influenza confirmed cases were similar in PW (45.1% - 57.7%) and NPW (42.4% - 60.1%) (Table I).

- A(H1)pdm09 was detected 1.3 times more frequently in PW than in NPW during 2013/14. This was not observed during 2015/16 season.

- B/Yamagata were identified in PW in a proportion 1.5 times higher than in NPW (2014/15 season).

- A(H3) was detected in higher proportion in NPW, 2 to 4 times higher when compared with PW, during 2013/14 and 2014/15 seasons, respectively .

- The other respiratory viruses were found in higher percentage among PW, with a positive rate between 55% and 68% during the 3 seasons.

- RSV, parainfluenza virus (PIV) and human metapneumovirus (hMPV) have a higher prevalence in PW while human rhinovirus (hRV) reach the highest percentage among NPW (Figure 1).

- In 606 women ILI cases that reported vaccination status, vaccine coverage was higher in NPW (6.3%; 29/463) compared to PW (4.1%; 6/143).

- Data on antiviral treatment was reported in 406 ILI cases. Antivirals were prescribed in 8.6% (28/235) of NPW and in 13.6% (11/81) of PW.

- Were reported 10 PW with need of hospitalization, 6 of these cases positive for influenza A(H1)pdm09 and 1 positive for rhinovirus. None of hospitalized PW were vaccinated.

## Conclusions

- PW must still be considered a high risk group for influenza and other respiratory viruses infection.

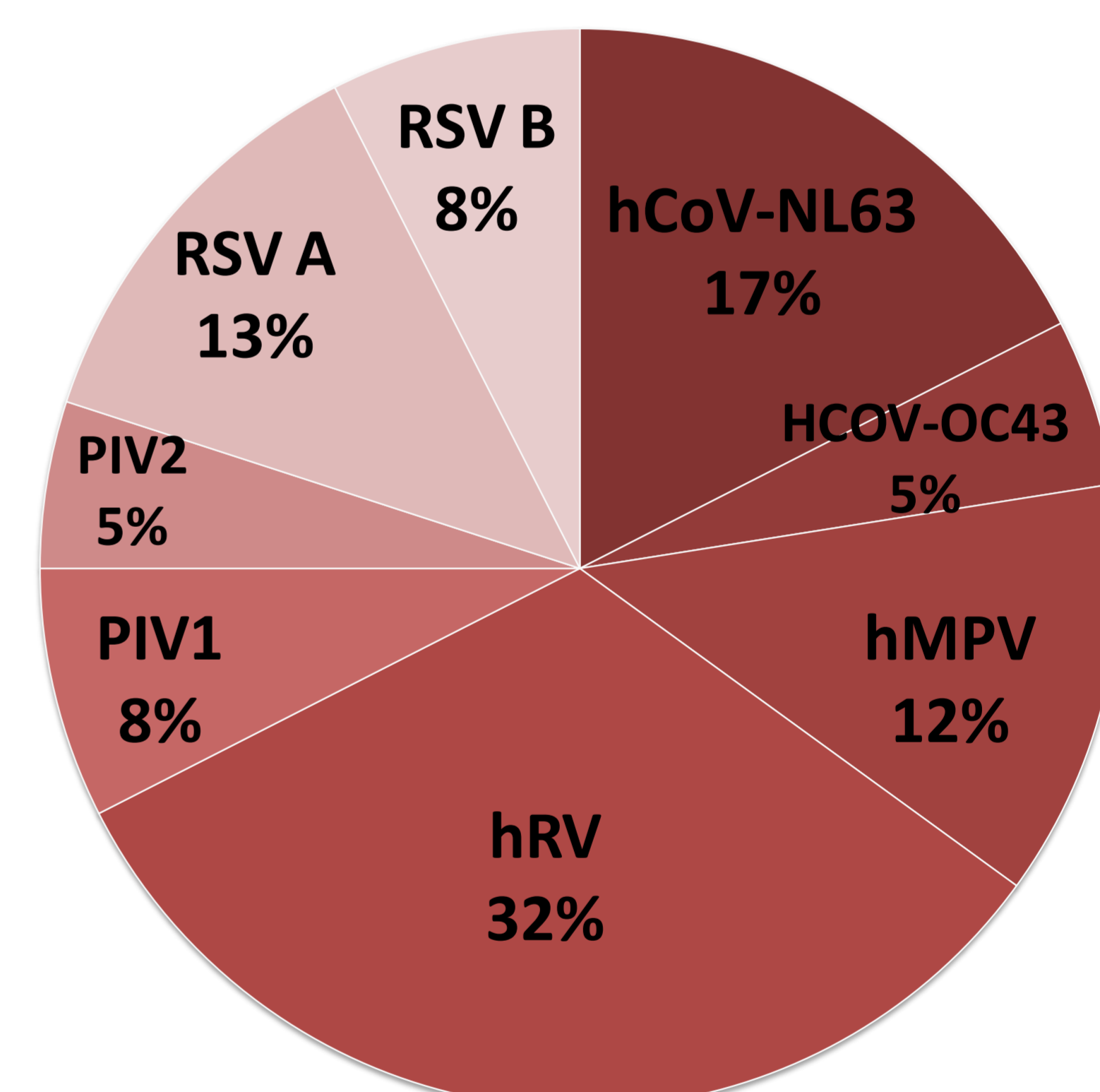
- This study highlights that influenza A(H1)pdm09 and B/Yamagata presented a higher frequency of infection in PW compared to NPW that might be associated with increased risk for complications.

- Reinforcement of vaccination campaign will be a challenge in influenza prevention, nevertheless, influenza vaccination is free and highly recommended in Portugal for PW risk group.

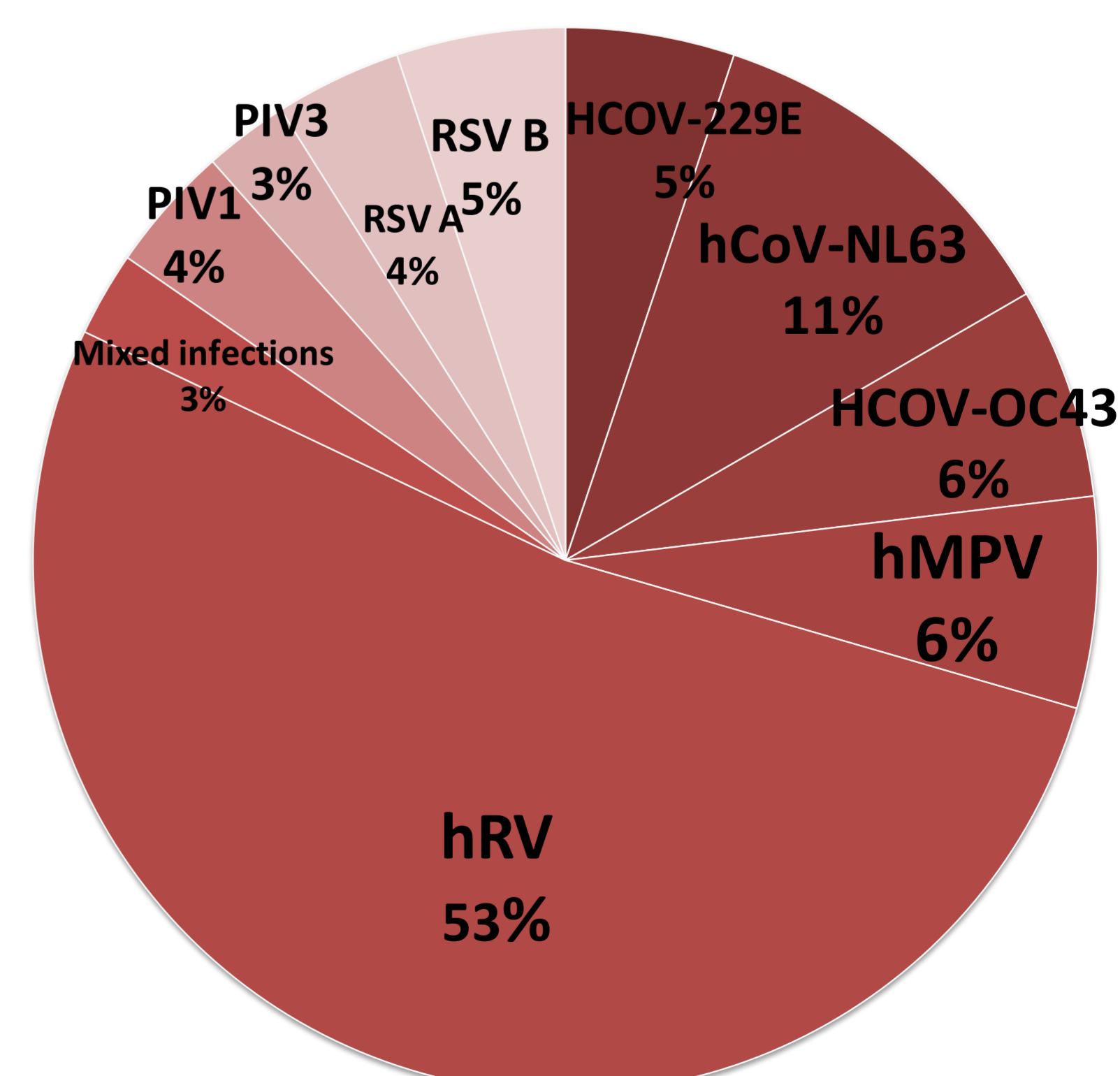
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## Respiratory viruses in Pregnant Women



## Respiratory viruses in Non Pregnant Women



**Figure 1** – Percentage of respiratory virus in PW and NPW between 2013 and 2016.