

Differential Diagnosis of Respiratory Viruses in Influenza-like Illness: Preliminary surveillance data



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Background

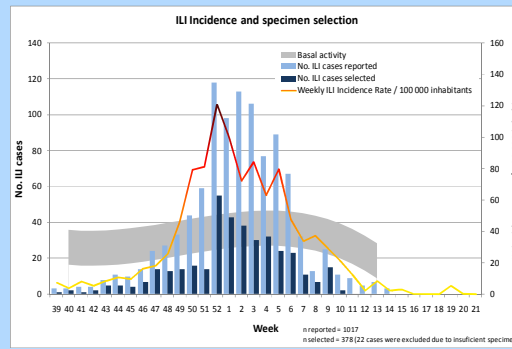
The National Influenza Reference Laboratory coordinates and performs virological surveillance of Influenza-like Illness (ILI), integrated in the Portuguese National Influenza Surveillance Programme. Despite of this well established surveillance, little is known about the aetiology, virology and clinical aspects of Influenza-like Illness in the country, other than that caused by influenza. National data shows that, during a winter influenza season, 40-70% of ILI cases are not attributed to influenza infection. This will have a significant impact on the estimation of influenza incidence, morbidity and mortality rates. Information on the contribution of other pathogens on the aetiology of ILI is, therefore, necessary. The objective of this preliminary study was to identify other respiratory viruses associated with Influenza-like Illness and their prevalence in Portugal, using an implemented and well established influenza surveillance programme

Materials and Methods

During the 2010/2011 influenza winter season, 1017 cases of influenza-like illness (according to the definition of the International Classification of Health Problems in Primary Care II (ICHPCC-II)) were reported to the National Influenza Reference Laboratory for influenza (FLU) diagnosis, in the context of the National Influenza Surveillance Programme. From these, 400 were selected to be additionally tested for other respiratory virus that cause respiratory illness with influenza-like symptoms, including respiratory syncytial virus (RSV) types A and B, human parainfluenza viruses (hPIV) types 1, 2 and 3, human rhinovirus (hRV) and adenovirus (AdV), by real-time PCR. Sample size was set in order to estimate the proportion of ILI cases positive for other respiratory virus, considering an expected prevalence of 50% and an absolute precision of 5% for the 95% confidence interval. The sample was selected with a random simple scheme using the package of statistical programs SPSS.

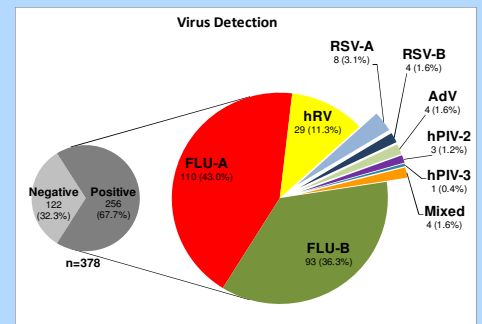
Results

378 specimens selected, 37.2% of the total ILI cases reported in the context of the National Influenza Surveillance Programme, spanning the entire influenza winter surveillance period and following an identical weekly case distribution.

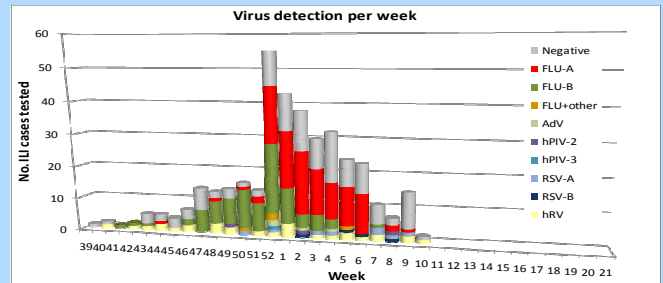


67.7% of specimens positive for at least one virus type.

Co-circulation of FLU (majority) with several other respiratory viruses (particularly with hRV, 11.3%).



hRVs were detected throughout the season, particularly in the beginning preceding the circulation of FLU viruses. **Other respiratory viruses were detected at low frequencies**, from the middle of the season onwards. **Co-infection of FLU with other viruses was observed.**



Age group	No. ILI cases									
	Reported (%)	Selected (%)	Positive (%)	FLU-A (%)*	FLU-B (%)*	hRV (%)*	AdV (%)*	hPIV (%)*	RSV (%)*	FLU+other (%)*
0-4	34 (3.3)	11 (2.9)	11 (100)	3 (27.3)	0 (0.0)	2 (18.2)	2 (18.2)	0 (0.0)	4 (38.4)	0 (0.0)
5-14	115 (11.3)	48 (12.7)	39 (81.3)	9 (23.1)	24 (61.5)	3 (7.7)	1 (2.6)	0 (0.0)	1 (2.6)	1 (2.6)
15-44	546 (53.7)	217 (57.4)	148 (67.3)	88 (48.6)	54 (37.0)	16 (11.0)	1 (0.7)	4 (2.7)	1 (0.7)	2 (1.4)
45-64	190 (18.7)	63 (16.7)	44 (69.8)	24 (54.5)	11 (25.0)	6 (13.6)	0 (0.0)	0 (0.0)	2 (4.5)	1 (2.3)
≥65	116 (11.4)	36 (9.5)	15 (41.7)	6 (40.0)	4 (26.7)	2 (13.3)	0 (0.0)	0 (0.0)	3 (20.0)	0 (0.0)
No information	16 (1.6)	3 (0.8)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
Total	1017	378	256 (67.7)	110 (43.0)	93 (36.3)	29 (11.3)	4 (1.6)	4 (1.6)	12 (4.7)	4 (1.6)

*Percentage refers to the total of positive cases

Although the **highest proportion of FLU cases is from children and young/adults**, the **higher proportion of the other respiratory viruses is observed in infants.**

Comments

The high frequency observed for FLU viruses was not unexpected since the recruitment of cases is, in this setting, biased towards the detection of influenza. Still, it is clear that multiple viruses co-circulate with influenza. Their influence on the clinical presentation of ILI cannot be concluded from the small number of cases recruited. However, there seems to be a tendency to have respiratory viruses, other than FLU, associated with infants from 0-4 years of age. It is our intention to continue this study next season, increasing the number of cases recruited in the context of the National Influenza Surveillance Programme.