

# Evaluation of ECDC Influenza-like illness (ILI) case definition to detect respiratory syncytial virus (RSV) infection through the Sentinel Influenza Surveillance

## System in Portugal, 2010-2018



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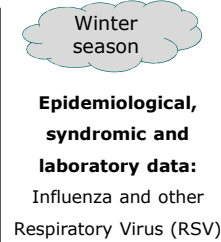
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## 1 INTRODUCTION

### Portuguese Sentinel Influenza Surveillance System

- General Practitioners' (GP) Sentinel Network
- I-MOVE's Euro EVA group
- Emergency and Obstetric Departments
- Portuguese Laboratory Network for the Diagnosis of Influenza Infection



### ECDC Case definitions

Acute Respiratory Infection (ARI)	Influenza-like Illness (ILI)
<ul style="list-style-type: none"> <li>✓ Sudden onset of symptoms,</li> <li>✓ At least one of the following three respiratory symptoms:                             <ul style="list-style-type: none"> <li>Cough</li> <li>Sore throat</li> <li>Shortness of breath</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ Sudden onset of symptoms,</li> <li>✓ At least one of the following three respiratory symptoms:                             <ul style="list-style-type: none"> <li>Cough</li> <li>Sore throat</li> <li>Shortness of breath</li> </ul> </li> <li>≠ At least one of the following four systemic symptoms:                             <ul style="list-style-type: none"> <li>Fever or feverishness</li> <li>Malaise</li> <li>Headache</li> <li>Myalgia</li> </ul> </li> </ul>

- PROBLEM:** No suitable definition → RSV underestimated worldwide. Global burden of RSV disease is not completely known. Vaccines in phase III are in trial.

## 2 OBJECTIVE

To evaluate the suitability of ARI, ILI and one respiratory symptom as case definitions to detect RSV infections in Portugal.

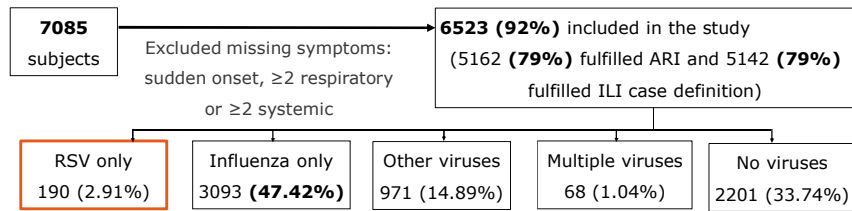
## 3 MATERIAL & METHODS

- Retrospective and observational cross-sectional study of 7085 cases (October 2010-May 2018)
- Clinical characteristics and RSV detection → associated by bivariate and multinomial logistic regression.
- Accuracy for case definitions → sensitivity, specificity, receiver operating characteristic (ROC) curve and area under the ROC curve (AUC).

## 4 LIMITATIONS

- No many pediatric hospitals are included in the influenza surveillance system and most are outpatients.

## 5 RESULTS



### Demographic characteristics of RSV positive cases

Age	Age group	0-4 y	5-14 y	15-64 y	≥ 65 y	Observed frequencies higher than expected
RSV + (n, %)		23 (13)	8 (4)	107 (58)	45 (25)	

Sex ♀ ≈ ♂

### Clinical characteristics associated with laboratory-confirmed RSV infections → very different according to the age

Clinical characteristics	RSV+ n, %	Crude OR	95% CI
Sudden onset of symptoms	157 83	1.05	(0.72-1.54)
Fever or feverishness**	129 68	0.41	(0.29-0.58)
Malaise	164 86	0.65	(0.43-1)
Headache**	123 65	0.66	(0.49-0.9)
Myalgia**	138 73	0.38	(0.27-0.53)
Cough*	180 95	2.29	(1.17-6.49)
Sore throat	143 75	1.21	(0.85-1.72)
Shortness of breath**	74 39	2.14	(1.58-2.88)
ILI case def.	154 81	1.15	(0.79-1.65)

\* p-value < 0.05; \*\* p-value ≤ 0.01.

### Accuracy of case definitions for RSV detections

RSV	ILI	ARI	Respiratory symptom	Influenza	ILI	ARI	Respiratory symptom
Sensitivity	81.1%	82.1%	99.5%	81.5%	81.6%	98.1%	98.1%
Specificity	21.1%	20.8%	3.1%	23.4%	22.9%	4.1%	4.1%
AUC*	0.51	0.51	0.51	0.52	0.52	0.51	0.51

\*AUC: Area Under the ROC Curve.

## 6 CONCLUSIONS & RECOMMENDATIONS

- RSV infections were highly significant among children <5 & adults >65 y.o.
- ARI and ILI case definition were not suitable to detect RSV infections in Portugal.

- RSV disease burden: sensitive case definition → one respiratory symptom.
- In Portugal: more suitable RSV+Influenza surveillance system and define a sensitive case definition, BUT different case definition according to the age.