# Influenza severe cases in hospitals, between 2014 and 2016 in Portugal

## Portuguese Laboratory Network for the Diagnosis of Influenza Infection

Raquel Guiomar[1]; Pedro Pechirra[1]; Paula Cristovão[1]; Inês Costa[1], Patrícia Conde[1]; Rita Côrte-Real[2]; Paula Branquinho[2]; Maria José Silvestre[2]; Madalena Almeida Santos[2]; Isabel Fernandes[2]; Isabel Dias[2]; Sónia Rodrigues[2]; Nadir Sena[3], Daniela Lazzara[3], Joana Sobrinho Simões[3]; Maria do Rosário Costa[3]; João Tiago Guimarães[3]; Fernando Rodrigues[4]; João Pereira-Vaz[4], Lurdes Correia[4]; Graça Andrade[5]; Ludivina Freitas[5]; Neuza Figueira[5]; Raquel Sanches[5]; Mónica Marques[5]; Margarida Barros[5]; Luísa Mota Vieira[6]; Rita Cabral Veloso[6]; Cláudia Castelo Branco[6]; Sílvia Pimentel[6]; Joana Duarte[6]; Tânia Pereirinha[6]; Sara Bulhões[6]; Raquel Moniz[6]; Maria José Brilhante[6]; Jácome Bruges Armas[7]; Ana Rita Pimentel Couto[7]; Margarida Santos[7]; Marta Soares[7]; José Melo Cristino[8]; Carlos Ribeiro[8]; Dinah Carvalho[8]; Rosário Barreto[8]; Maria Helena Ramos[10]; Ana Paula Castro[10]; Ana Cláudia Matos Santos[10]; Mário Cunha[11]; Luís Martins[11]; Sofia Almeida[12]; Maria João Peres[13]; Regina Viseu[13]; Filipe Inácio[13]; Paula Mota[14]

[1] National Influenza Reference Laboratory, Infectious Diseases Department, National Institute of Health;

[2-14] Members of the Portuguese Laboratory Network for the Diagnosis of Influenza Infection

Instituto **Nacional de Saúde** Doutor Ricardo Jorge

REPÚBLICA PORTUGUESA SAÚDE

[2]Centro Hospitalar de Lisboa Central, E.P.E.; [3]Centro Hospitalar de São João, E.P.E; [4]Centro Hospitalar e Universitário de Coimbra, E.P.E.,[5]Hospital Central do Funchal, E.P.E., [6]Hospital do Divino Espírito Santo de Ponta Delgada, E.P.E., [7]Hospital do Santo Espírito de Angra do Heroísmo, E.P.E., [8]Centro Hospitalar de Lisboa Norte, E.P.E., [9]Centro Hospitalar do Porto, E.P.E., [11]Instituto Português de Oncologia de Lisboa, Francisco Gentil, E.P.E., [12]Centro Hospitalar da Cova da Beira, E.P.E., [13]Centro Hospitalar de Setúbal, E.P.E., [14]Hospital da Senhora da Oliveira, Guimarães, E.P.E.
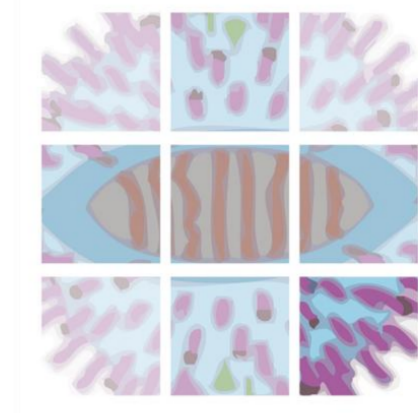
REDE PORTUGUESA DE LABORATÓRIOS PARA O DIAGNÓSTICO DA GRIPE

**PORTUGAL**

## Background:

Since 2009, the Portuguese Laboratory Network for Influenza Diagnosis (PLNID) has integrated 15 Laboratories in Portugal mainland and Atlantic Islands of Azores and Madeira. This PLNID added an important contribute to the National Influenza Surveillance Program regarding severe and hospitalized influenza cases. The study described influenza virus types/subtypes detected in influenza like illness (ILI) cases: outpatients (Outp), hospitalized (Hosp), and intensive care units (ICU), between 2014 and 2016.

## Methods:

The PLNID performs influenza virus diagnosis by biomolecular methodologies and weekly reports, to the National Influenza Reference Laboratory, ILI cases tested for influenza. Reports include data on detected types/subtypes, hospital assistance, antiviral therapeutics, and information on death outcome. Were reported during two winter seasons 8059 ILI cases, being 3560 cases in 2014/15 (1204 in Outp, 1750 Hosp, and 606 in ICU) and 4499 cases in 2015/16 (1933 in Outp, 1826 Hosp, and 740 in ICU).

Table I – Number and proportion of influenza cases in outpatients, hospitalized and in ICU patients during 2014/15 and 2015/16 (weeks 40/2015 to 12/2016) reported by the Portuguese Laboratory Network for Influenza Diagnosis.

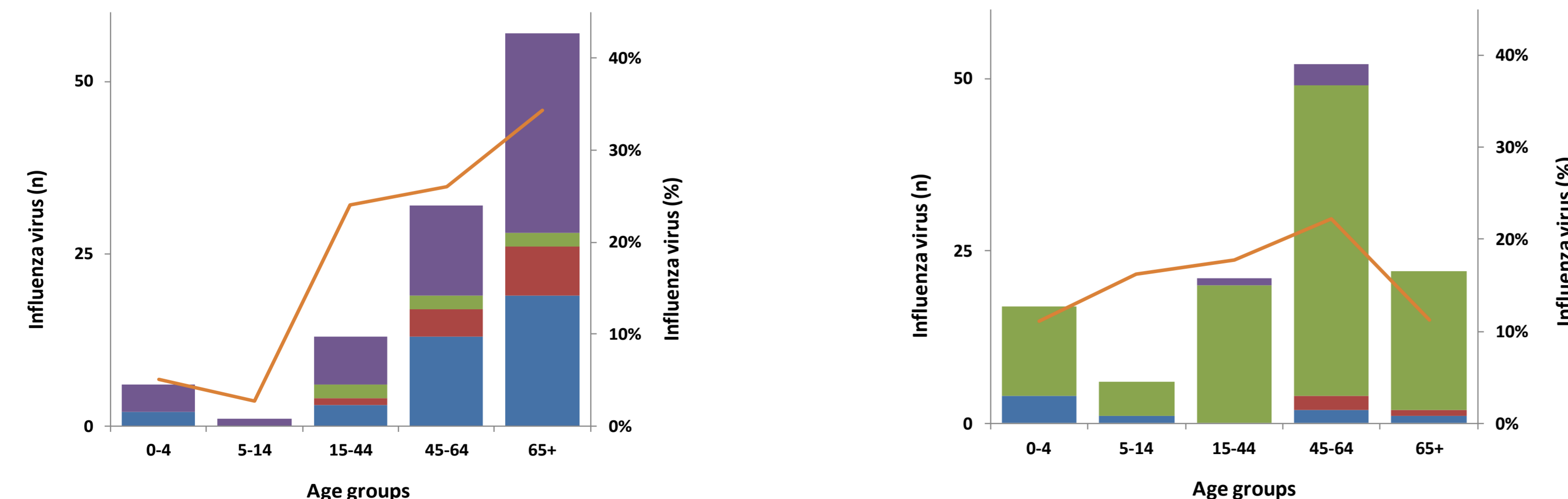| Medical ward | Influenza Positive | | | |
|---|---|---|---|---|
| | 2014/15 | | 2015/16 (weeks 40/2015 to 12/2016) | |
| | % | n/n total | % | n/n total |
| Outpatients | 21 | 253/1204 | 20 | 382/1933 |
| Hospitalized | 18 | 311/1750 | 13 | 235/1826 |
| ICU | 18 | 109/606 | 16 | 117/740 |
| All patients | 19 | 673/3560 | 16 | 734/4499 |

### Outpatient
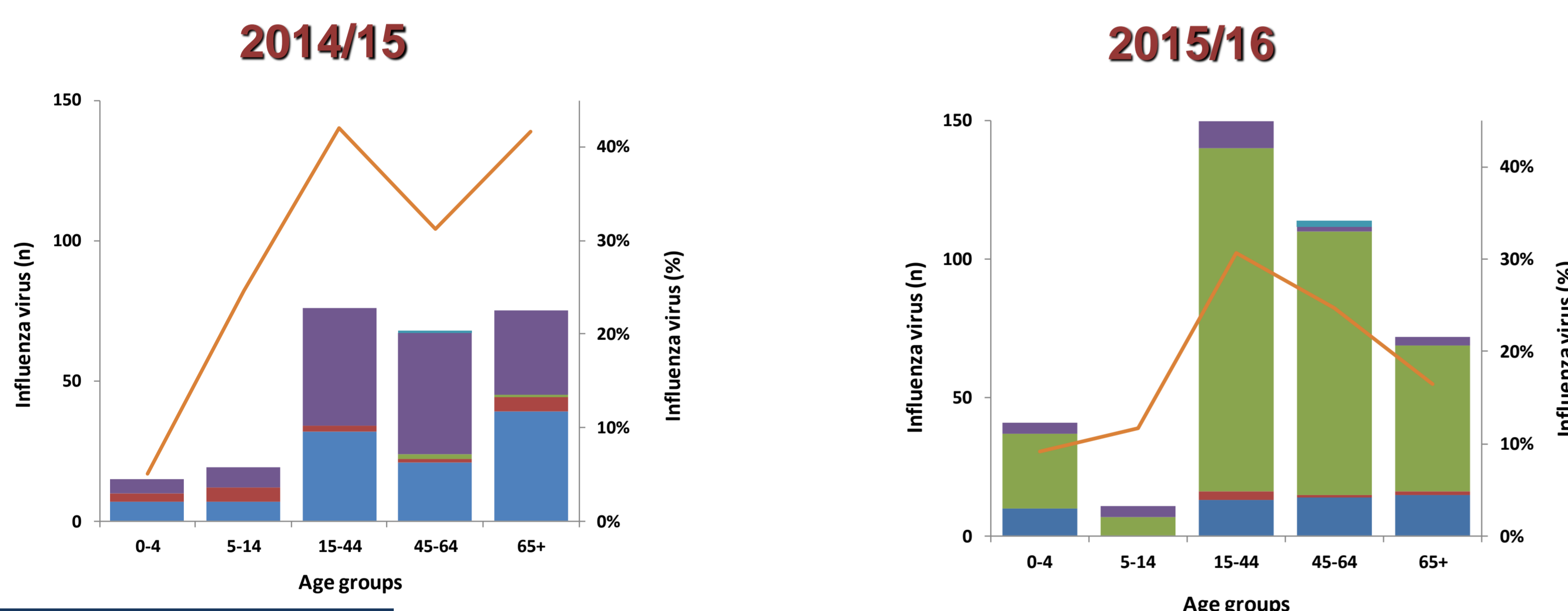


### Hospitalized
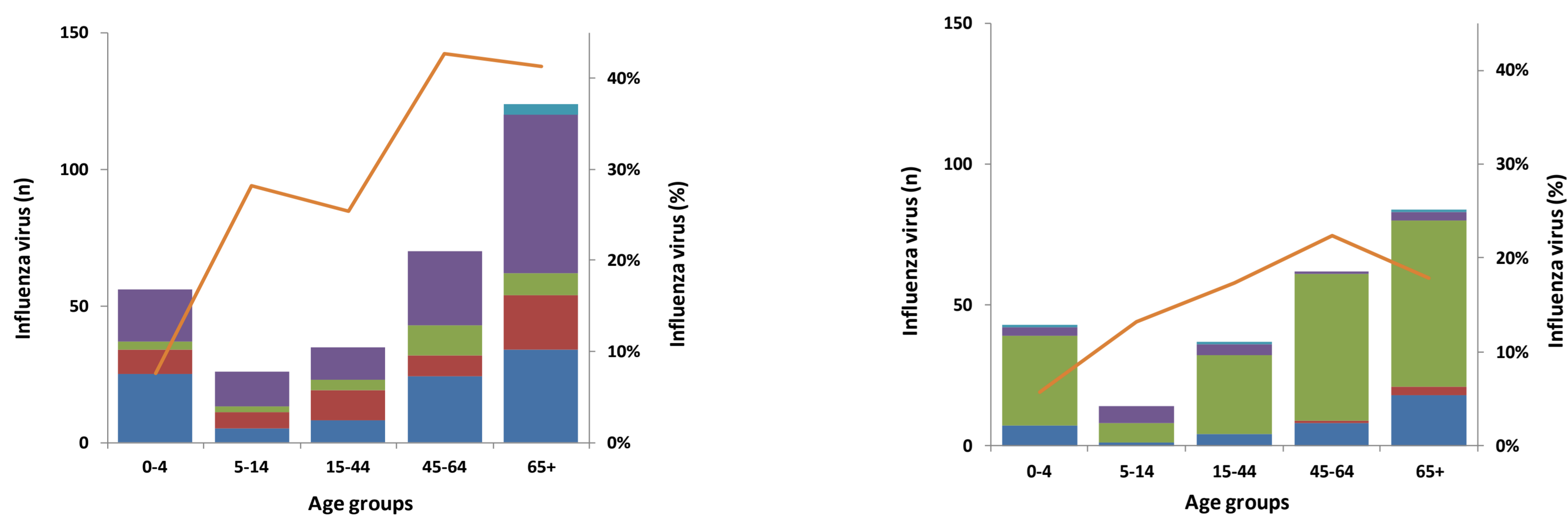


### ICU



## Results:

- The higher percentage of influenza positive cases were detected in Outp in both seasons, 21% during 2014/15 and 20% in 2015/16.

### 2014/15

- Influenza B and A(H3) co circulated. Influenza cases were more frequent in adults. Individuals older than 65 years old required more hospitalizations, even in ICU.

- Even when influenza A is not the dominant virus, correlates with higher detection rate in hospitalized cases (Hosp and UCI), with higher frequencies in adults older than 44.

### 2015/16

- Influenza A(H1)pdm09 was the dominant virus. Influenza cases were mainly detected in individuals between 15-64 years old.

- Highest proportion of influenza positive cases with hospitalization in ICU were observed in adults between 45-64 years, majority associated with influenza A(H1).

- Influenza B represented a higher proportion of flu cases in younger age groups: 0-4 and 5-14 years old. Detections of influenza B increased till the end of the season.

Legend:
- Influenza Multiple Infection
- Influenza B
- Influenza A(H1)pdm09
- Influenza A(H3)
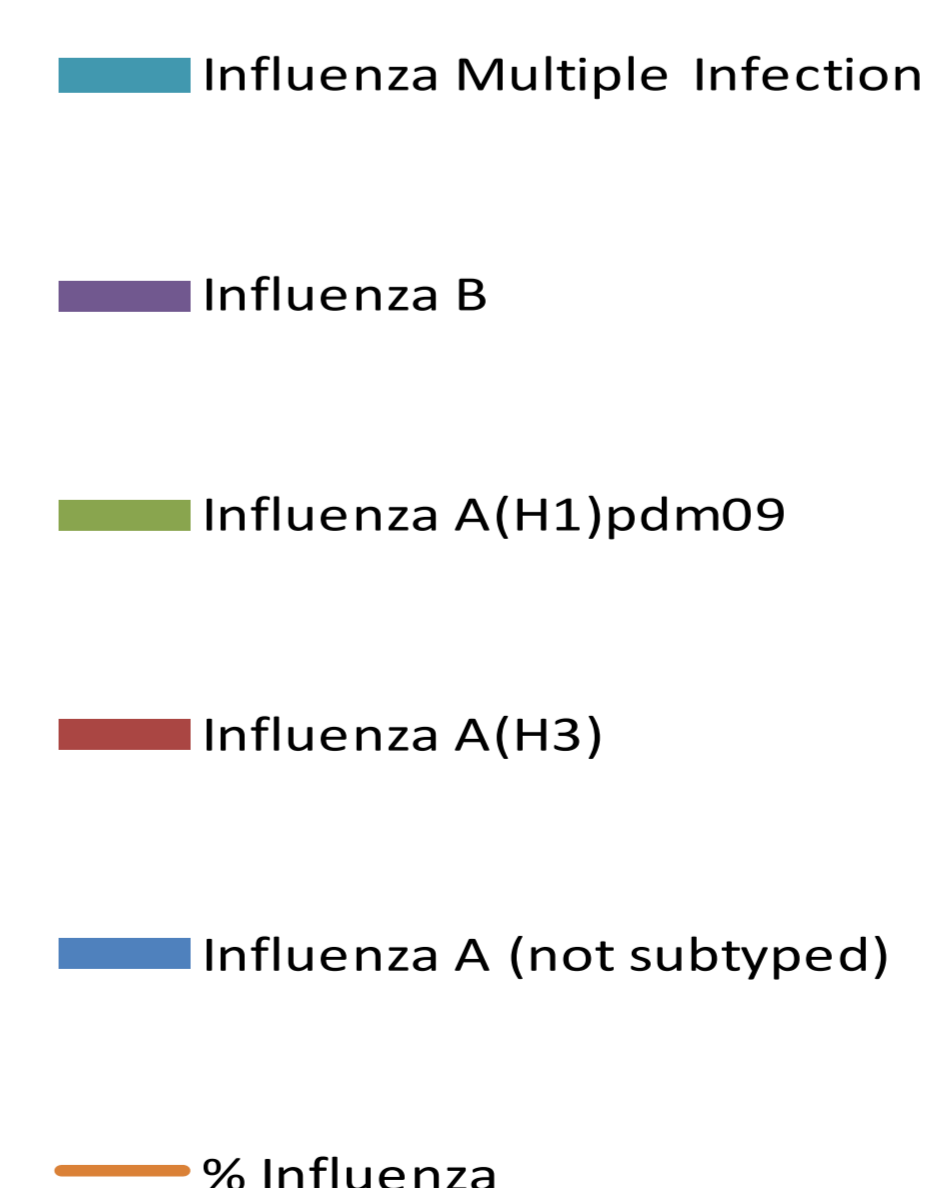- Influenza A (not subtyped)
- % Influenza

Figure 1 – Number and proportion of influenza cases by age group detected in outpatient, hospitalized and ICU patients during 2014/15 and 2015/16 (weeks 40/2015 to 12/2016) reported by the Portuguese Laboratory Network for Influenza Diagnosis.

## Conclusions:

This study highlights the correlation of the influenza virus type/subtype that circulates in each season with the possible need for hospitalization and intensive care in special groups of the population. Circulation of influenza A subtypes can cause more frequent disease in individuals older than 45 [A(H1pdm09) in 45-64 and A(H3) in 65+], with need of hospitalization including intensive care. On the other hand, influenza B is more frequently associated with less severe cases and with infection in children and younger adults. Influenza B circulation might predict lower number of hospitalizations. The identification of influenza type in circulation, by PLNID in each season, could guide action planning measures in population health care.