Health Protection Surveillance Centre
Lárionad Faire um Chosaint Sláinte

Influenza surveillance in Ireland during the 2014/2015 season; impact of influenza A(H3) viruses on morbidity and mortality.

Lisa Domegan & Joan O'Donnell

20th May 2015

Outline of presentation

- Objectives of influenza surveillance
- Overview of 2014/2015 influenza season
- Influenza A(H3) – antigenic drift
- Conclusions

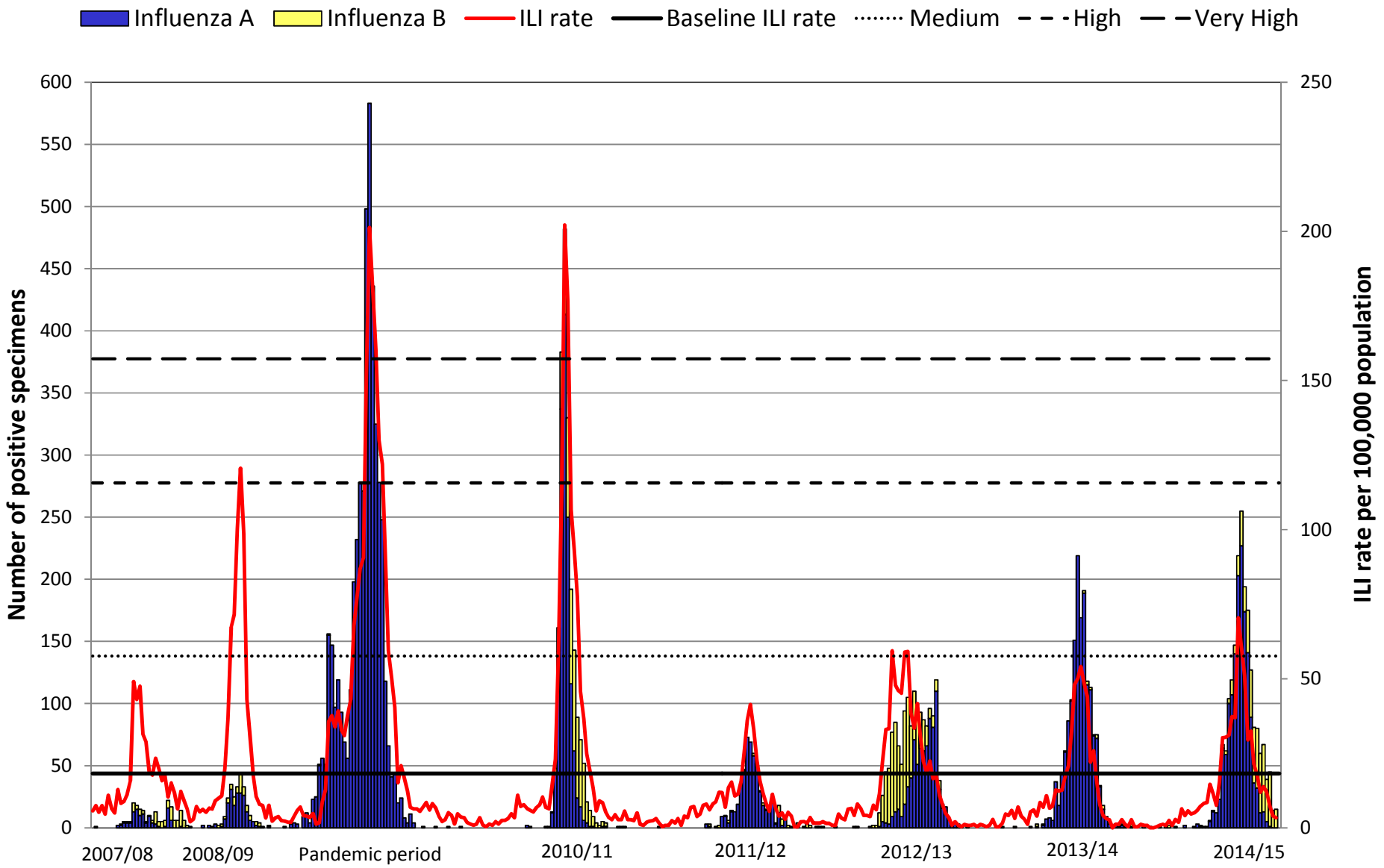
Influenza Surveillance

- To determine when influenza viruses are circulating
- To identify circulating strains and to detect changes in the viruses e.g. drift or shift in virus, strains with pandemic potential, antiviral resistance
- To monitor morbidity and mortality related to influenza
- To determine which groups are most affected, in order to inform public health interventions

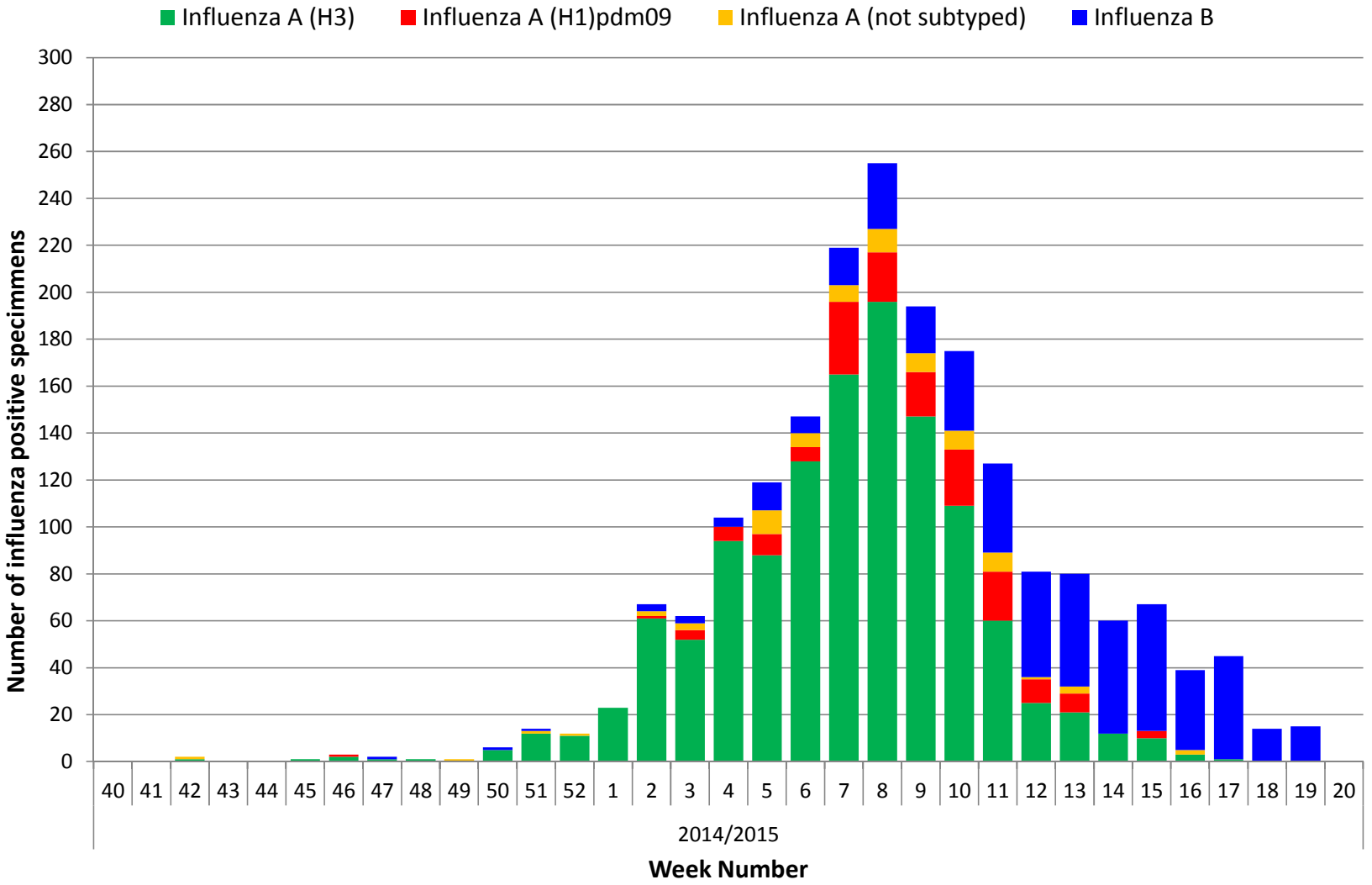
Main Objective of Presentation

- To determine the impact of circulating influenza viruses on morbidity and mortality in 2014/2015

GP ILI consultation rates, baseline rate & number flu positive specimens by week & season



Number of influenza positive specimens by week & type 2014/15 - NVRL



Antigenic/genetic drift 2014/15 season

- Globally, antigenic characterisation of circulating A(H3) viruses indicated differences from the A(H3) vaccine strain.
  - 2014/15 A(H1)pdm09 & B vaccine components likely to protect against circulating viruses.
- Ireland – Genetic/antigenic data (NVRL)
  - Of 31 A(H3) viruses genetically characterised, 84% have fallen into genetic subgroups antigenically dissimilar to the 2014/15 A(H3) vaccine strain.
  - All 27 A(H1)pdm09 viruses genetically/antigenically characterised were similar to vaccine strain.
  - All 18 influenza B viruses were characterised as B/Yamagata-like viruses, similar to vaccine strain.

Influenza severity in Ireland by season

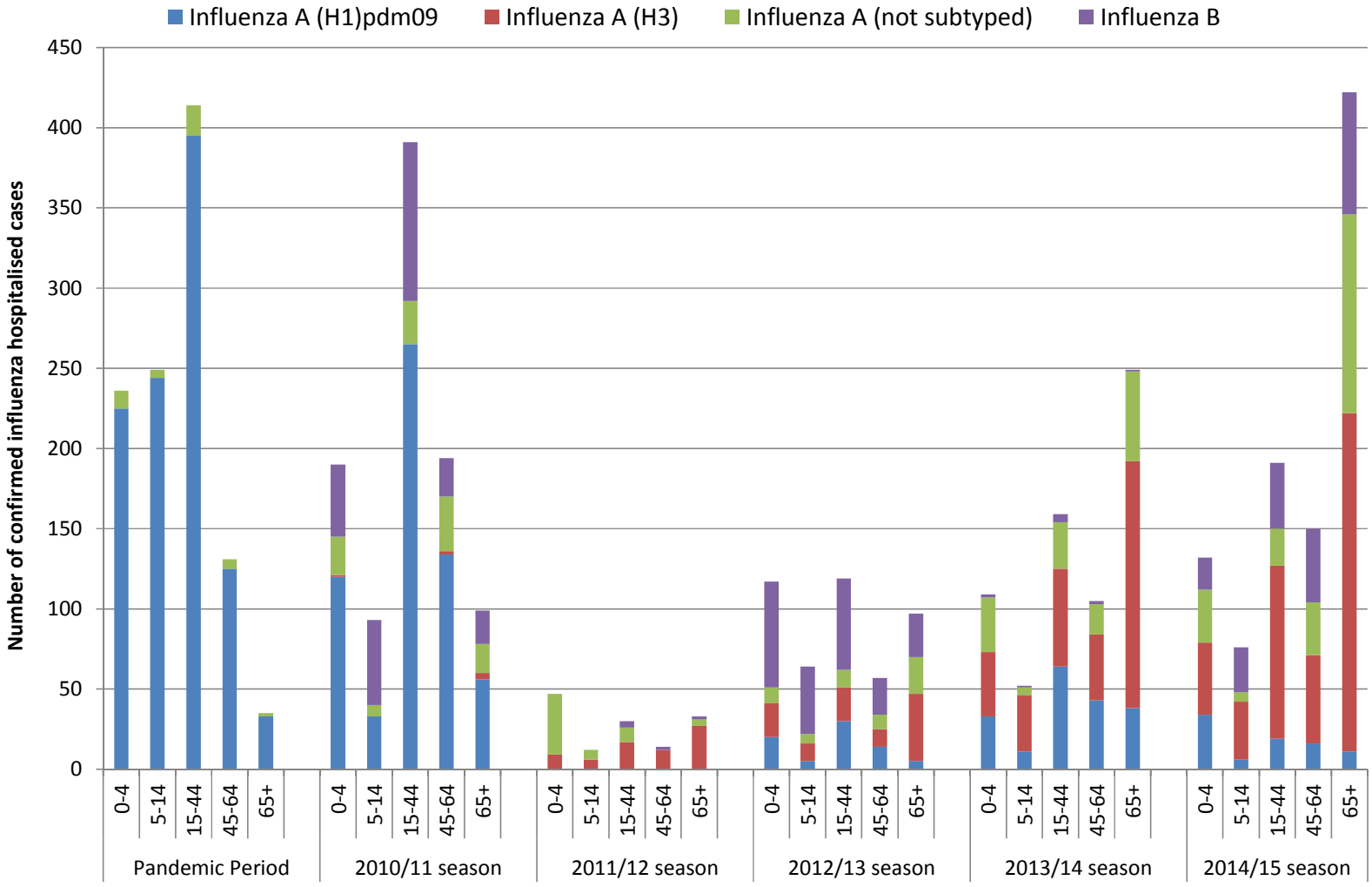
	Hospitalised					
	Pandemic period	2010/11	2011/12	2012/13	2013/14	2014/15
Total cases	1059	968	147	469	693	978
Crude rate /100,000	23.1	21.1	3.2	10.2	15.1	21.3
Median age (years)	17	29	27	32	51	59
Females	50%	55%	56%	57%	57%	53%

	Admitted to ICU					
	Pandemic period	2010/11	2011/12	2012/13	2013/14	2014/15
Total cases	100	121	15	39	83	53
Crude rate /100,000	2.2	2.6	0.3	0.8	1.8	1.2
Median age (years)	34	49	60	39	50	66
Females	50%	53%	80%	49%	41%	38%
Cases with risk factor	81	90	13	35	69	50
	82%	74%	93%	90%	85%	94%
% Vaccinated	NA	17%	-	-	32%	59%
ICU Median LOS - Adult	12	14	5	9	9	8
ICU Meduan LOS - Paediatric	8	7	3	5	8	8
Case fatality ratio	18%	29%	33%	28%	33%	36%

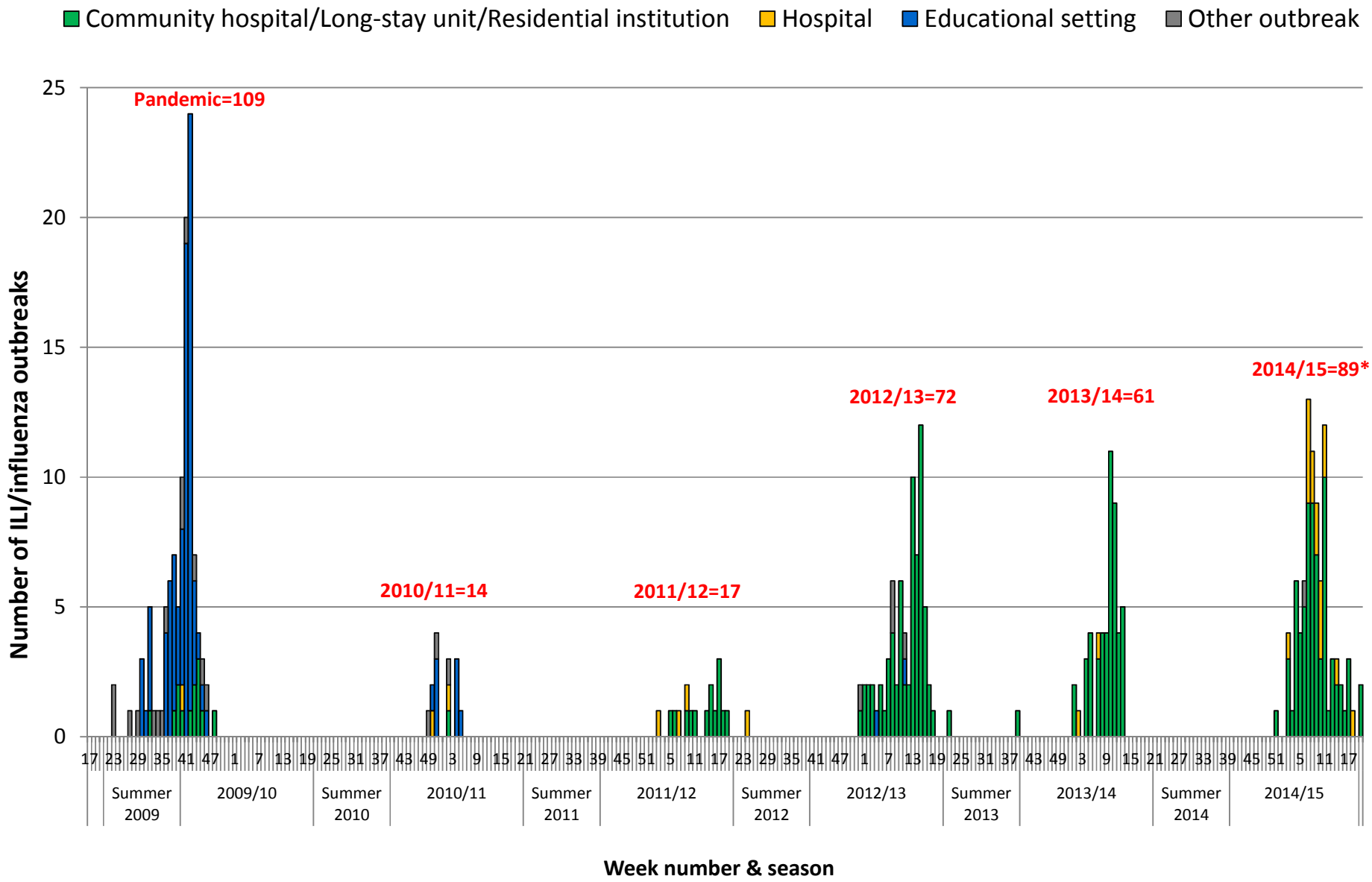
*2014/2015 data provisional, further reported cases expected.

Health Protection Surveillance Centre
Lárionad Faire um Chosaint Sláinte

Confirmed influenza hospitalised cases in Ireland by age-group, influenza type/subtype & season



Influenza/ILI Outbreaks by week & season

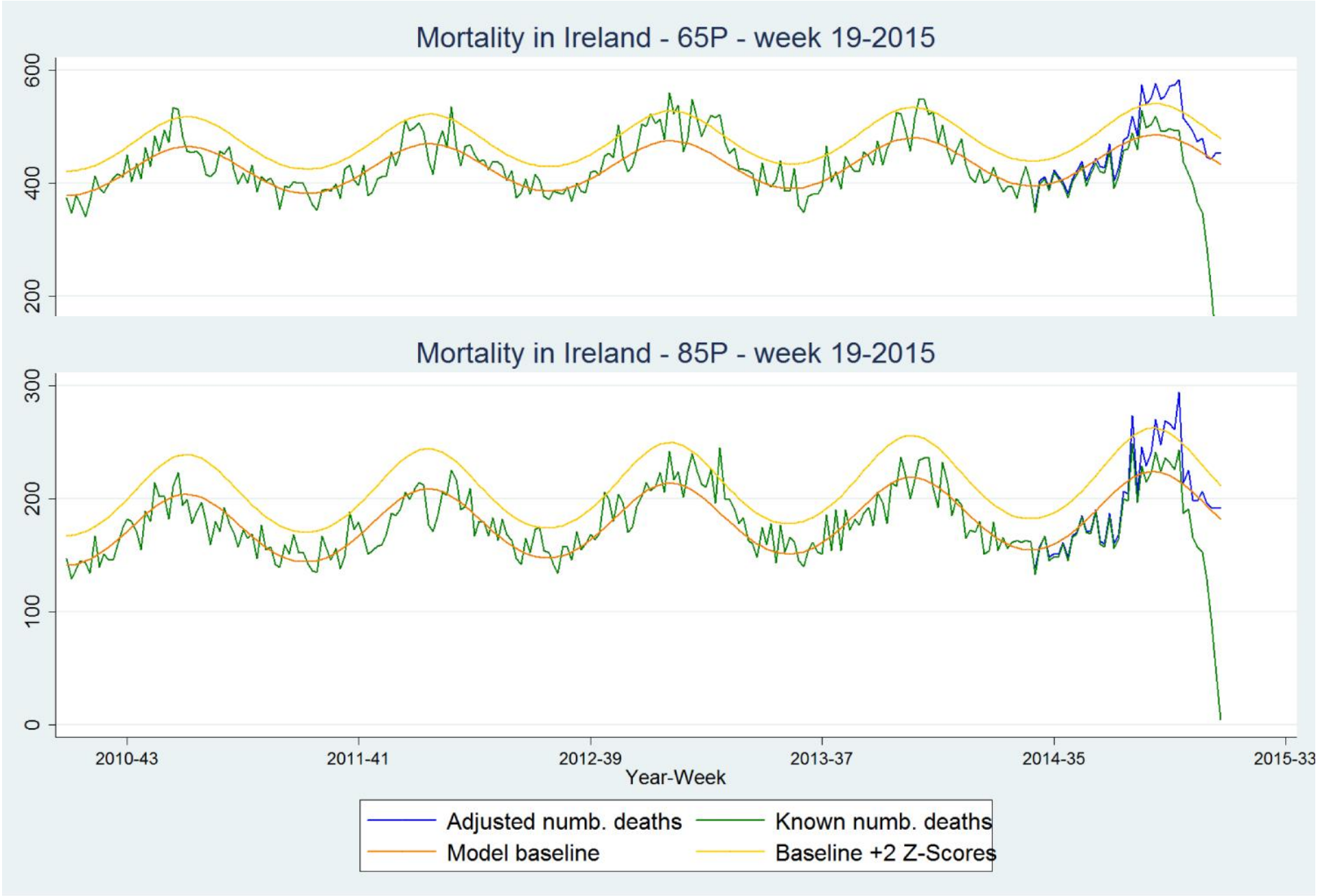


Influenza-associated deaths in Ireland

	Influenza-associated deaths					
	Pandemic period	2010/11	2011/12	2012/13	2013/14	2014/15
Total deaths	29	38	13	32	43	39*
Crude rate /100,000	0.6	0.8	0.3	0.7	0.9	0.8
Median age (years)	54	57	88	86	80	83
Age range (years)	8-83	2-83	81-98	0-95	0-97	56-95
Females	15	18	5	16	22	19
	52%	47%	38%	50%	51%	49%

*57 deaths reported for notified influenza cases in 2014/2015 season; cause of death currently being investigated for 18 deaths.

Excess mortality in Ireland - aged 65 years or older



A(H3) virus and vaccine effectiveness (VE) - 2014/2015

- ECDC rapid risk assessments
  - Drifted influenza A(H3N2) viruses in Europe
- US study: VE against A(H3) 22%
- Canadian study: VE against A(H3) -8%
- UK study: VE against A(H3) -2.3%
- IMOVE TND Case control group:
  - Interim VE against A(H3) Low.
- Ireland VE study:
  - Interim VE against A(H3) Low

Conclusions

- 2014/2015 season more severe than recent seasons
- Influenza A(H3) predominated, followed by influenza B
- Over 65 year olds most affected
- Increase in confirmed influenza hospitalisations
- Excess deaths in over 65s for nine consecutive weeks
- Increase in confirmed influenza outbreaks reported
  - mainly influenza A(H3) in RCFs for the elderly
- Evidence of antigenic drift of A(H3) - vaccine mismatch
- Vaccine effectiveness for A(H3) – Low.
- 2015/2016 – what to expect?

Acknowledgements

- **Sentinel GPs**
- **ICGP** – Michael Joyce & Olga Levis
- **NVRL** – Suzie Coughlan, Margaret Duffy, Grainne Tuite, Allison Waters, Deirdre Burke
- **Departments of Public Health**
- **GP OOHs** – Elaine Brabazon, HSE-NE
- **ICSI** – Brian Marsh
- **HPSC** - Paula Flanagan & Margaret McIver (ICU); Ajay Oza (Excess mortality); Margaret Fitzgerald.
- **IMOVE** - Coralie Giese (Epiet fellow), Kasia Piotroska & Emma Skelly HPSC
- **International partners** – Epiconcept & EuroMOMO

Follow HPSC on Twitter
@hpscireland

twitter