

Epidemiological Analysis from a worldwide network of hospitals - "Global Influenza Hospital Surveillance Network" (GIHSN)

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BACKGROUND

The GIHSN focuses on estimating the incidence of severe influenza disease leading to hospitalization, documenting influenza strains that are circulating and the burden of disease attributable to each strain. If possible, also provides the framework for estimating effectiveness of the seasonal influenza vaccines in prevention of severe cases in various age and risk groups.

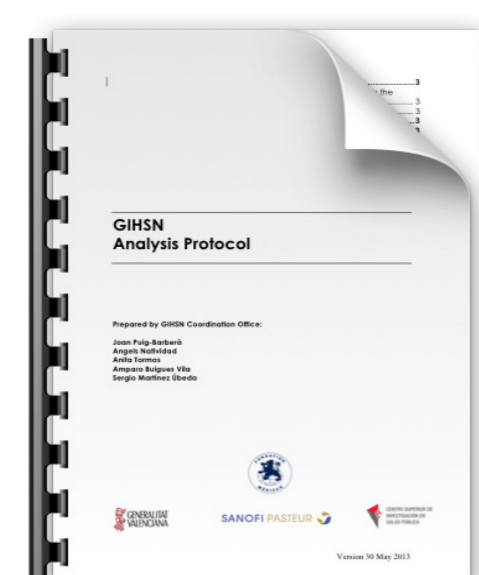


- 5 hospitals in Spain, 1 in Valencia, 2 in Castellón, 2 in Alicante
- 5 hospitals in France, 2 in Paris, 1 in Montpellier, 1 in Limoges, 1 in Lyon
- 7 hospitals in Turkey, 3 in Istanbul, 2 in Ankara, 1 in Edirne, 1 in Bursa
- 4 hospitals from the Russian Federation, 3 in St. Petersburg, 1 in Moscow

During the influenza season of 2012-2013, the network was composed of 21 hospitals (5 hospitals in Spain, 5 in France, 4 from the Russian Federation and 7 from Turkey).

METHODS

A core protocol, questionnaire and spreadsheet were created to compile the essential elements of the influenza epidemiological research project.



All sites' spreadsheets were merged together into a pooled database. Summary tables, frequency tables and visual representations of representative values of the pooled database were used to detect irregular, absent and questionable values.

RESULTS

Descriptive qualitative characteristics of each site were gathered such to assess heterogeneity.

	Spain	France	Moscow	St. Petersburg	Turkey
Hospital characteristics	5 hospitals	5 hospitals	1 hospital for infectious disease	3 hospitals children and adults ARI	7 hospitals
Catchment area (n)	1,266,895	Not identified	11,577,021	4,899,344	3,105,532
Target Population	All ages	All ≥18 years old	All ages	All ages	All ages
Eligibility	Emergency admission with signs or symptoms possibly related to influenza; hospitalized < 48hrs	Hospitalized from the emergency wards and others; hospitalized for < 24hrs	Hospitalized in participating wards; in the previous 24hrs ARI and diagnoses associated with influenza infection	ARI Hospitalized from the emergency wards, hospitalized < 48hrs	Hospitalized from the emergency ward and admitted in the participating wards, hospitalized < 48 hours.
Recruitment strategy	Full time trained nurses	Doctors, clinical researchers and nurses	Doctors, nurses and head of wards	Doctors	Doctors
Inclusion criteria	ILI symptoms <= 7 days	ILI symptoms <= 7 days	ILI symptoms <= 7 days	ILI symptoms <= 7 days	ILI symptoms <= 7 days
Exclusion criteria	Institutionalized; hospital in the previous 30 days; previous lab-confirmed influenza	No Social Security; institutionalized; hospitalized for respiratory infection; previous lab-confirmed influenza	Institutionalized; hospital in the previous 30 days; previous lab-confirmed influenza	Institutionalized; hospital in the previous 30 days; previous lab-confirmed influenza	Institutionalized; previous lab-confirmed influenza
Definition of the study period	Start: Two consecutive weeks with two or more cases End: Two consecutive weeks with no cases	Start and End of the study period is signaled by the national surveillance system	Start: week where 5 influenza lab-confirmed cases are detected End: week with no positives	Start: week where 5 influenza lab-confirmed cases are detected. End: week with no positives	Pilot study
Study period (epidemiological admission week)	01-2013 to 15-2013	51-2012 to 16-2013	02-2013 to 21-2013	03-2013 to 22-2013	01-2013 to 14-2013

Fig.1. Site descriptive characteristics

Tables and graphs were employed to visualize results of the incidence of influenza associated hospitalizations across age groups, the incidence of the disease attributable to each strain of the influenza virus, and the distribution of different influenza strains among cases.

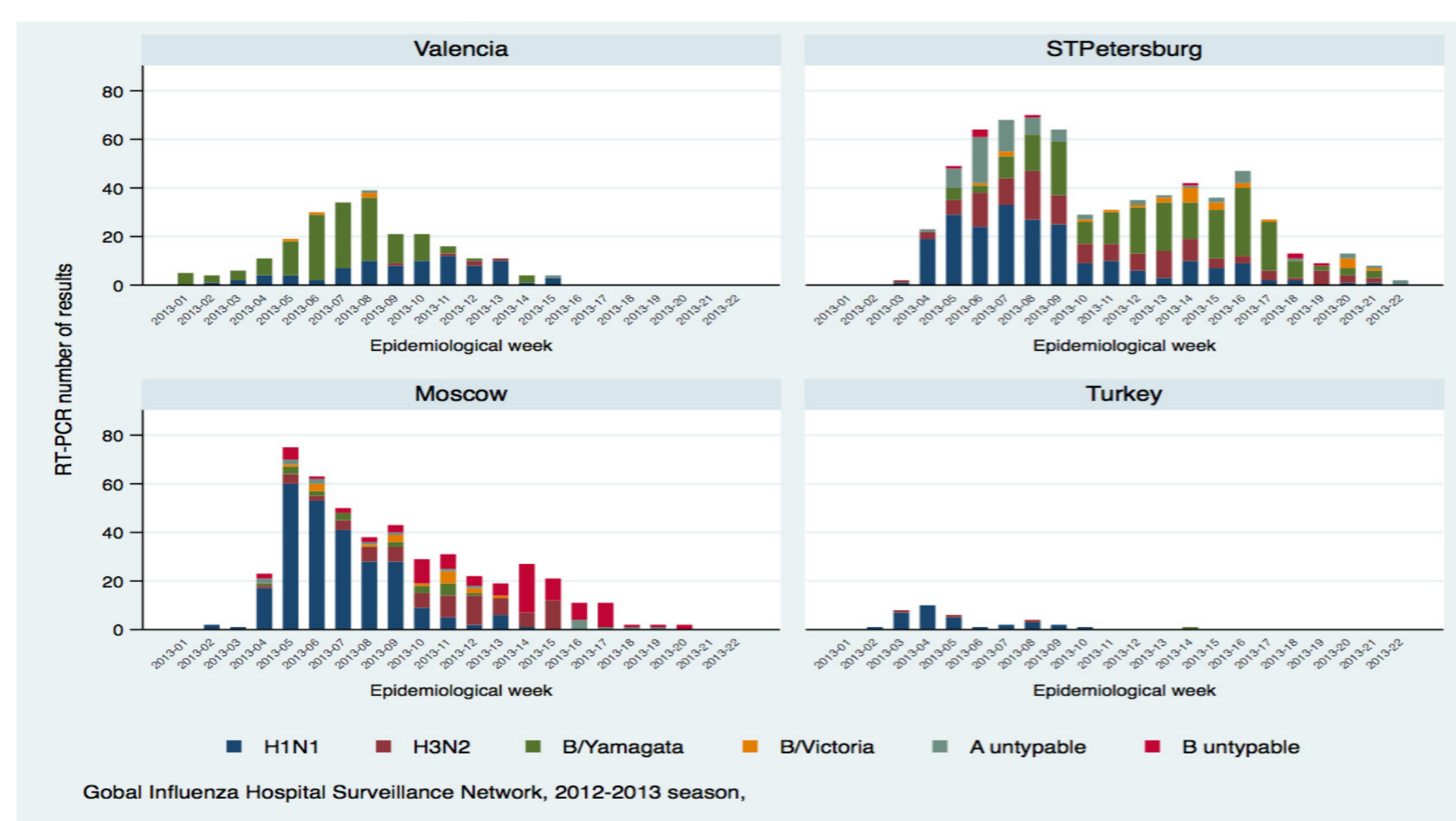


Fig.2 Example of GIHSN analysis of virus by site and week

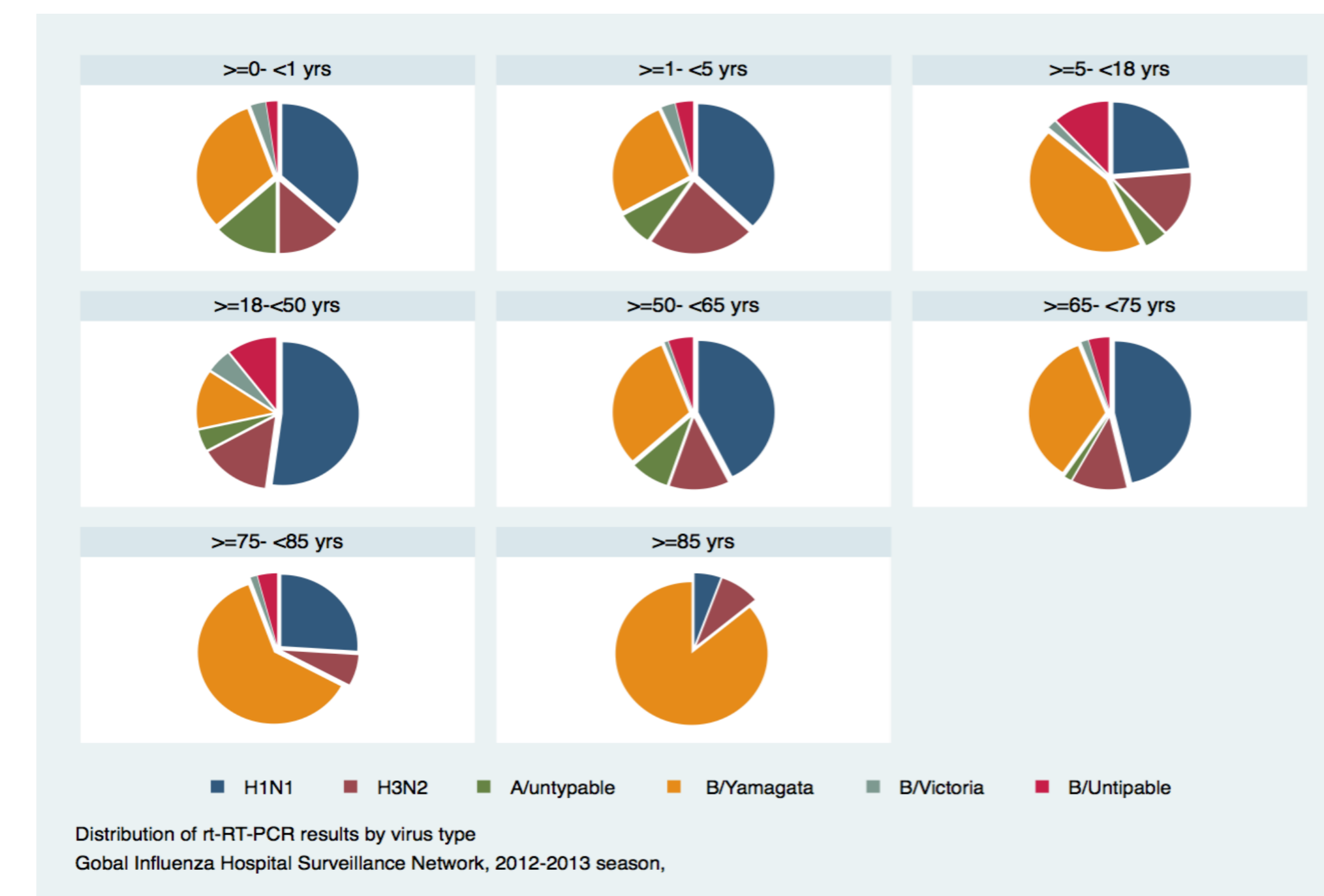


Fig.3 Example of GIHSN analysis of virus by age and group

Vaccine effectiveness for preventing influenza related admissions in the population targeted for vaccination will be estimated at site level.

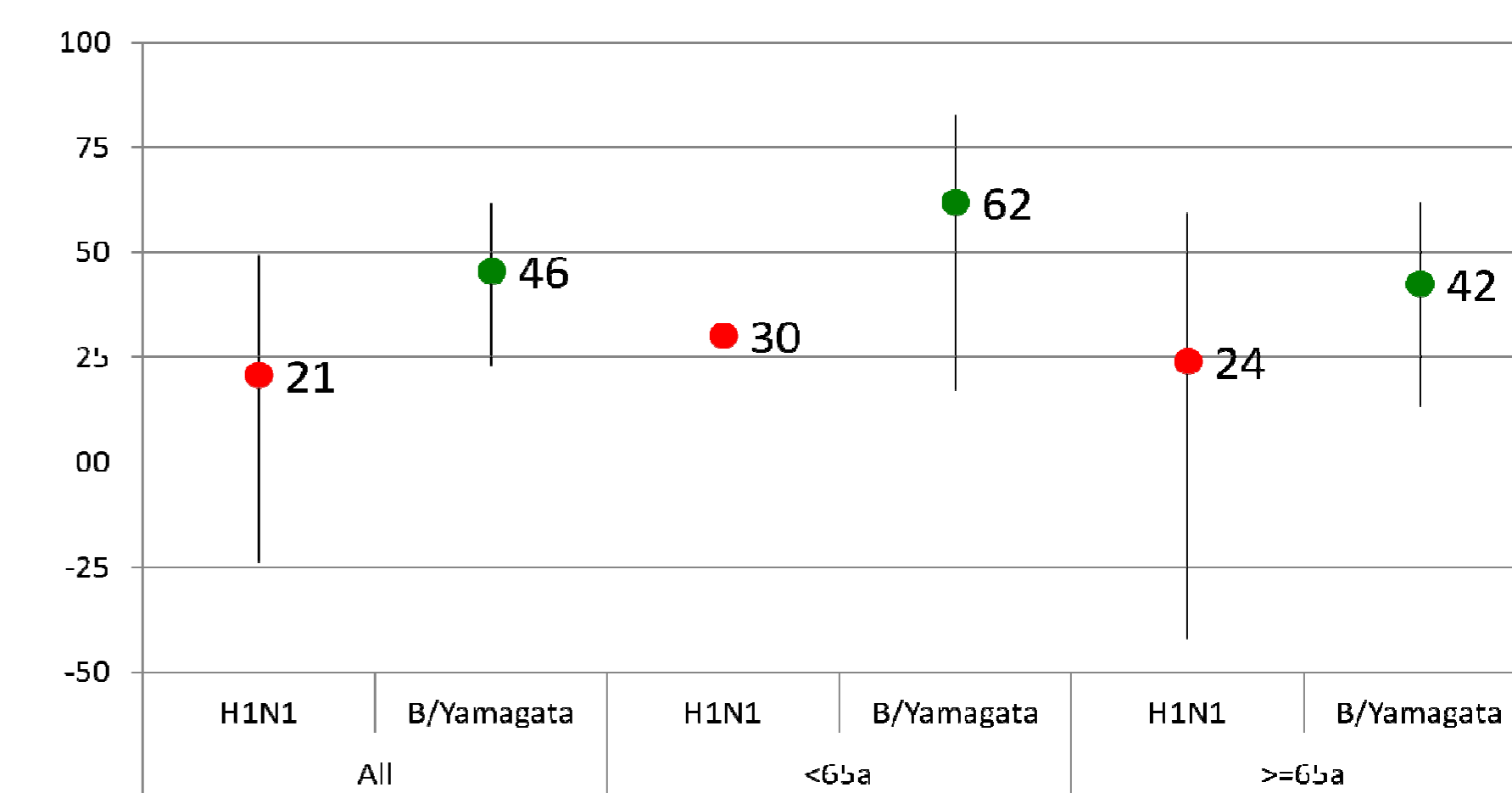


Fig.3 Example of GIHSN IVE analysis by strain and age

CONCLUSIONS

The study allowed for the collection of good quality data, however for complete assessment of all pooled data, further investigation and consistent results are needed.

A multi-centre hospital based study is feasible and maintaining a homogenous practice across sites through strong coordination and support ensures quality.