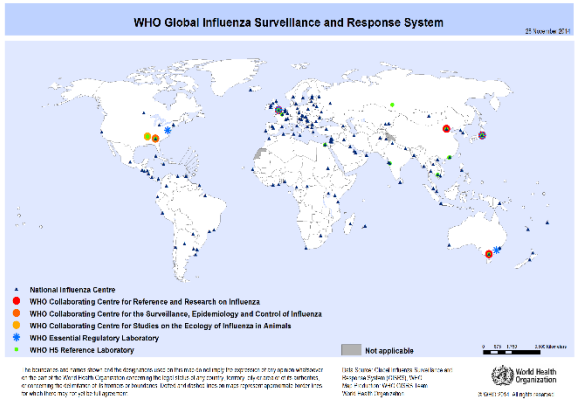
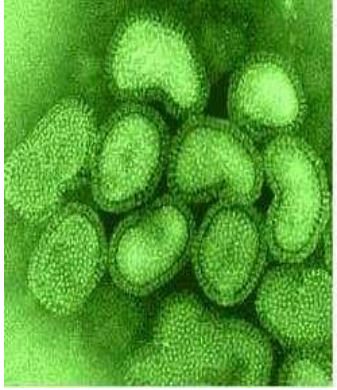
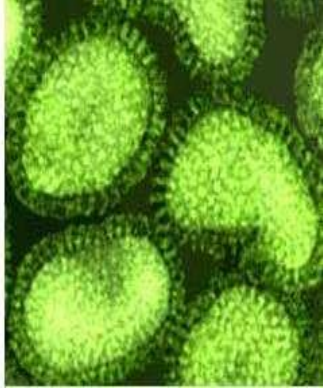


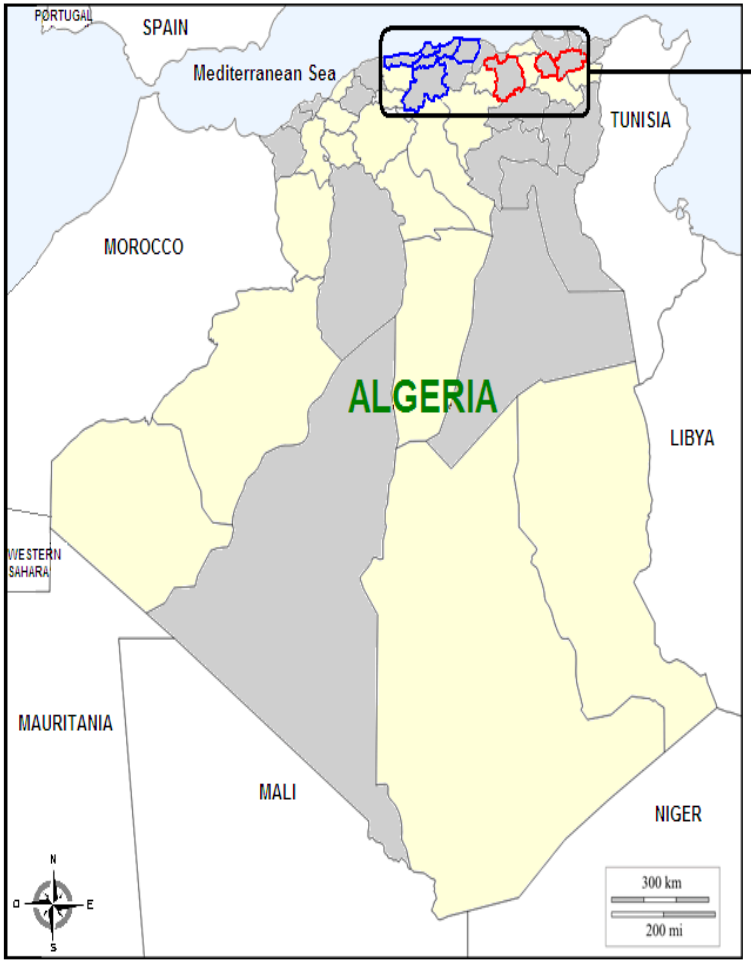




Algeria Action Plan

Dr Derrar, Dr Hammadi

INFLUENZA IN ALGERIA - NATIONAL SURVEILLANCE



Algerian Influenza Sentinel Surveillance Network Site (GROG) :

- **Six provinces in the North Center**
- **Three provinces in the North East**

- Started within the **2006-2007** influenza season.
- From September to March (30 weeks) sentinel sites
- **Clinical monitoring :** general practitioners and pediatricians, weekly report to the **NIPH** all influenza-like illness.
- **Virological surveillance : NIC,** detection, typing/subtyping, virus isolation, sequencing

Geographical origin of virological specimens

World Health Organization

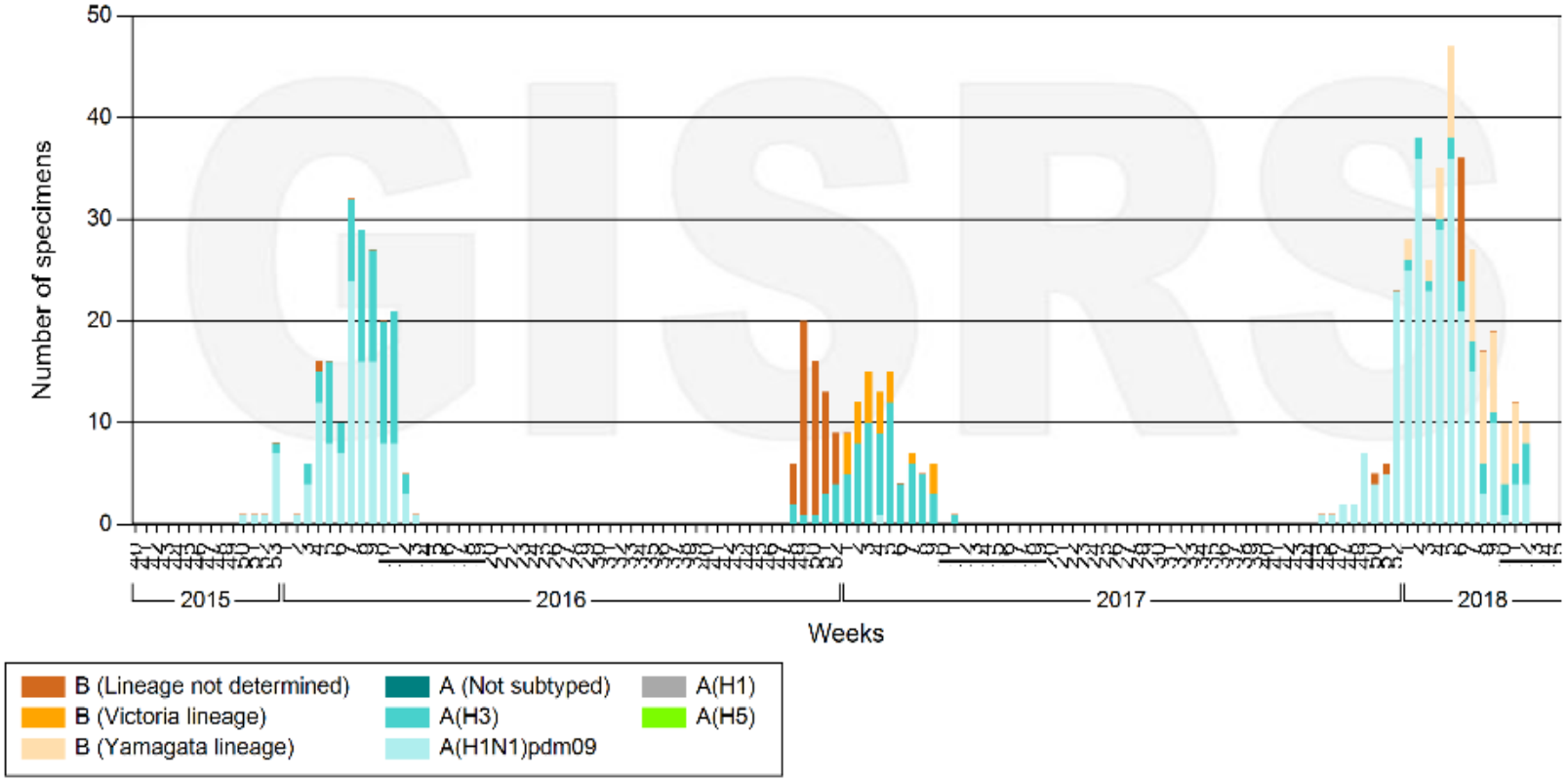
Influenza Laboratory Surveillance Information

by the Global Influenza Surveillance and Response System (GISRS)

generated on 06/04/2018 23:05:58 UTC

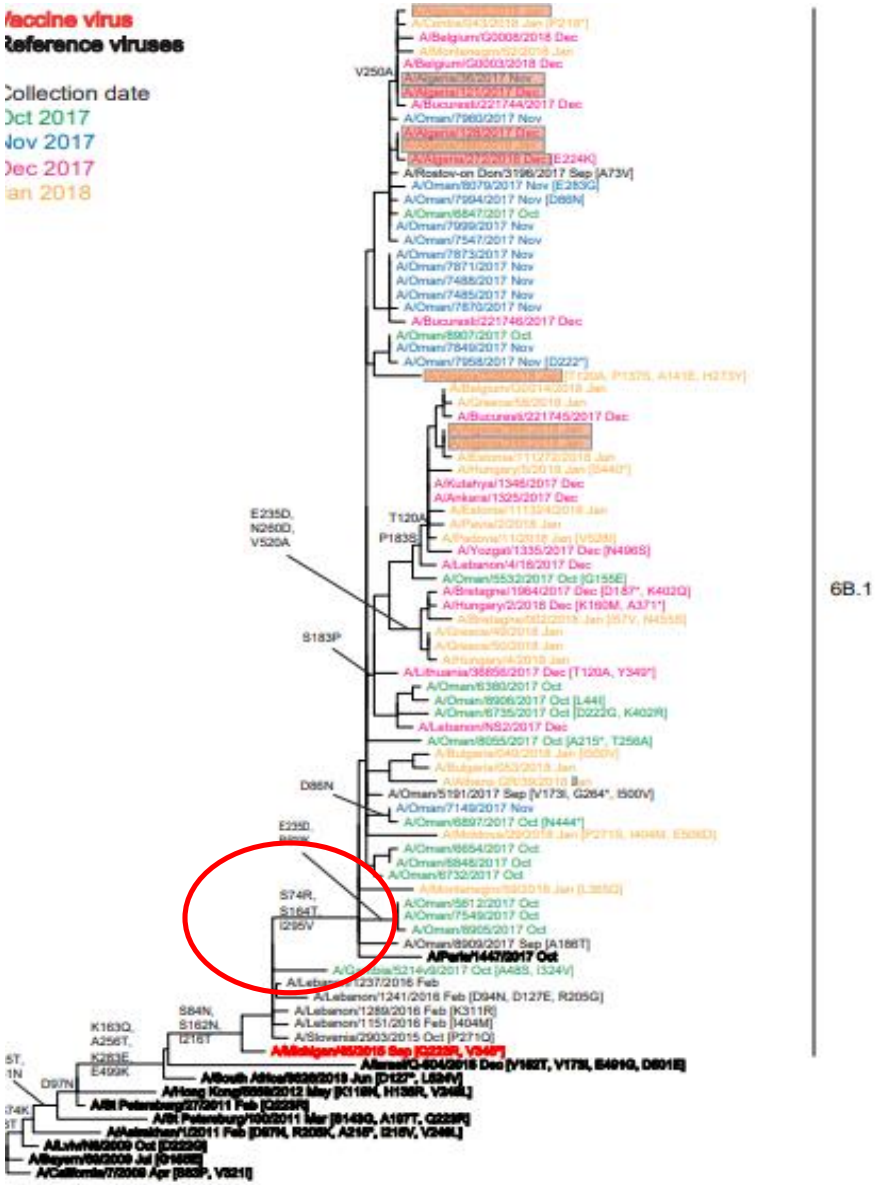
Algeria

Number of specimens positive for influenza by subtype



Data source: FluNet (www.who.int/flunet), GISRS

Phylogenetic comparison of A(H1N1)pdm09 HA genes 17/18



- Clade 6B.1

- Substitutions S74R, **S164T** and I295V. the S164T substitution in HA1 affects the quality of glycosylation of N 162 in HA1 , was associated with the rapid global spread of these viruses

- Antigenically close related to candidate vaccine virus

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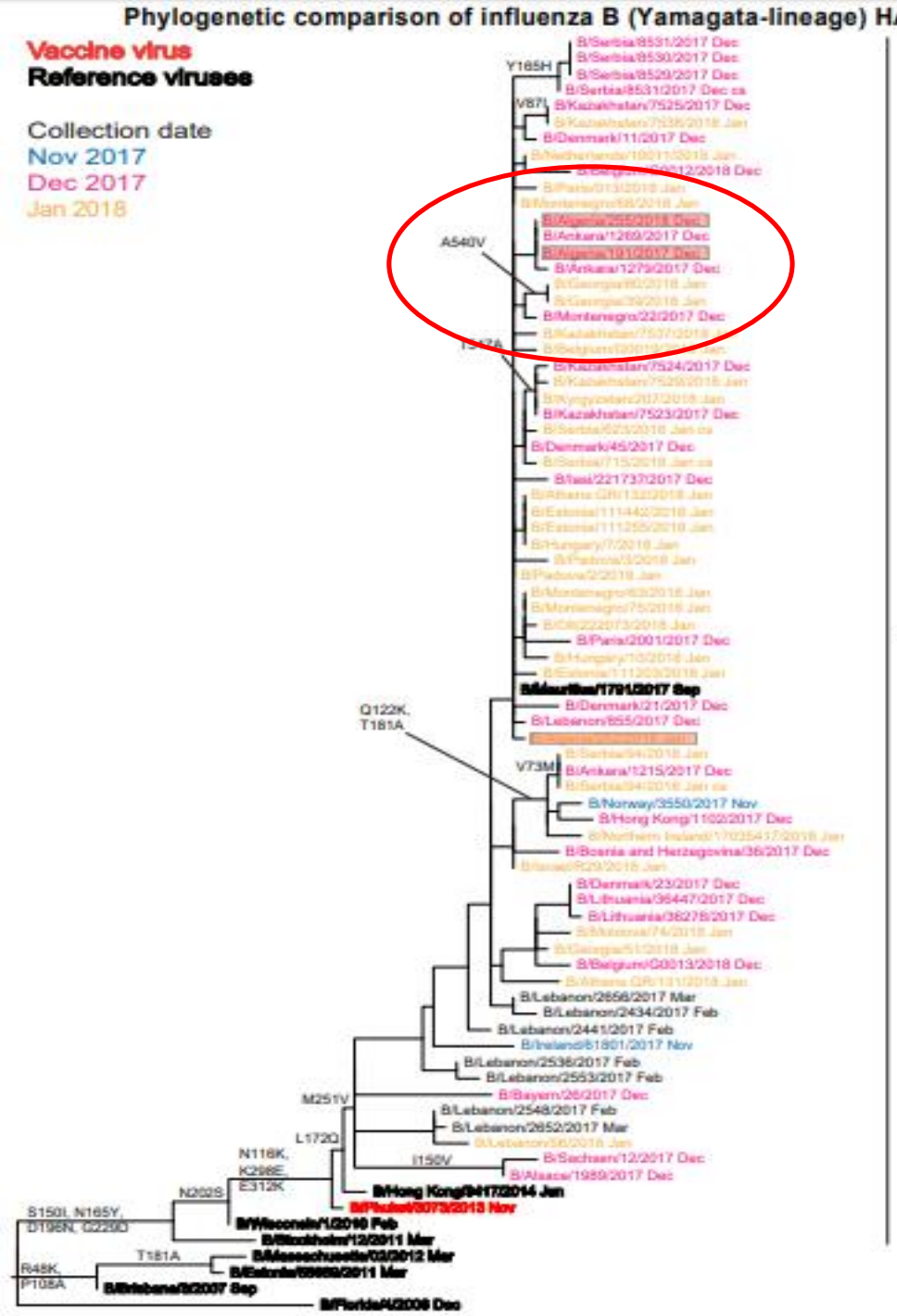
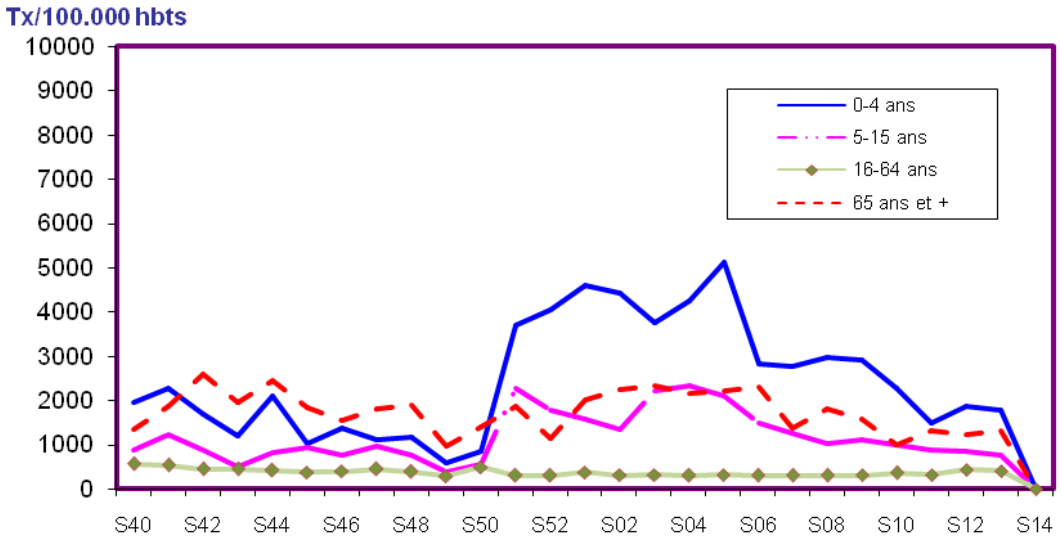


- All the B viruses circulating in Algeria are (Yamagata-lineage)

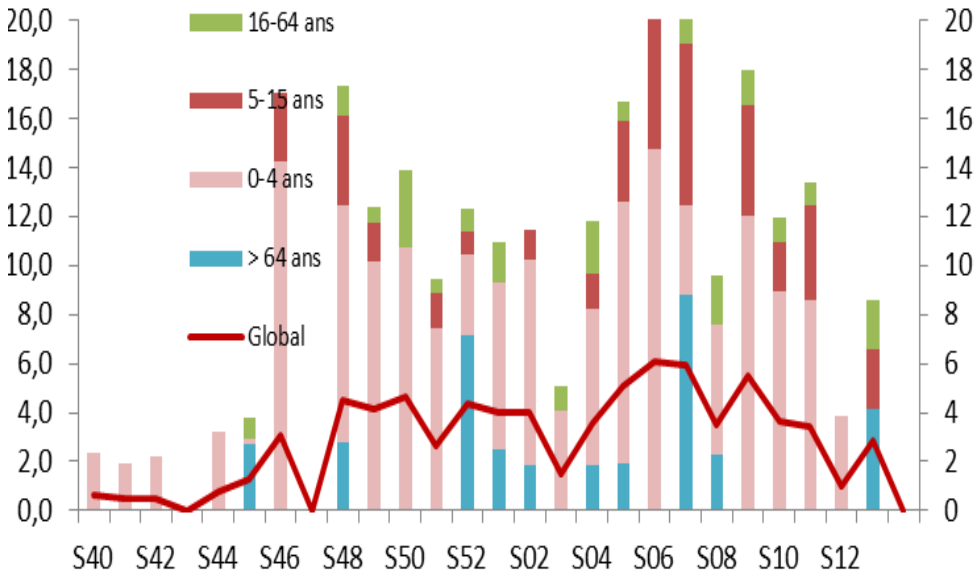
- The Trivalent vaccine include a B (Victoria-lineage) with deletion of 02 aa or 03 aa

- Quadrivalent vaccine ??

Weekly incidence of influenza-like illness



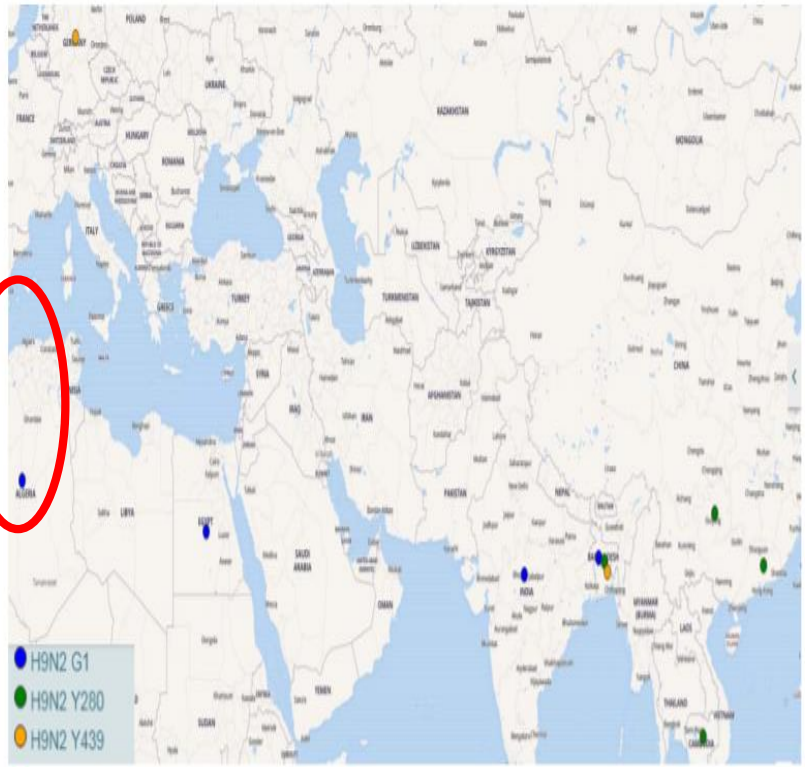
percentage of primary complications overall and by age



Zoonotic Influenza Virus

World Health Organization

A(H9N2) activity in birds

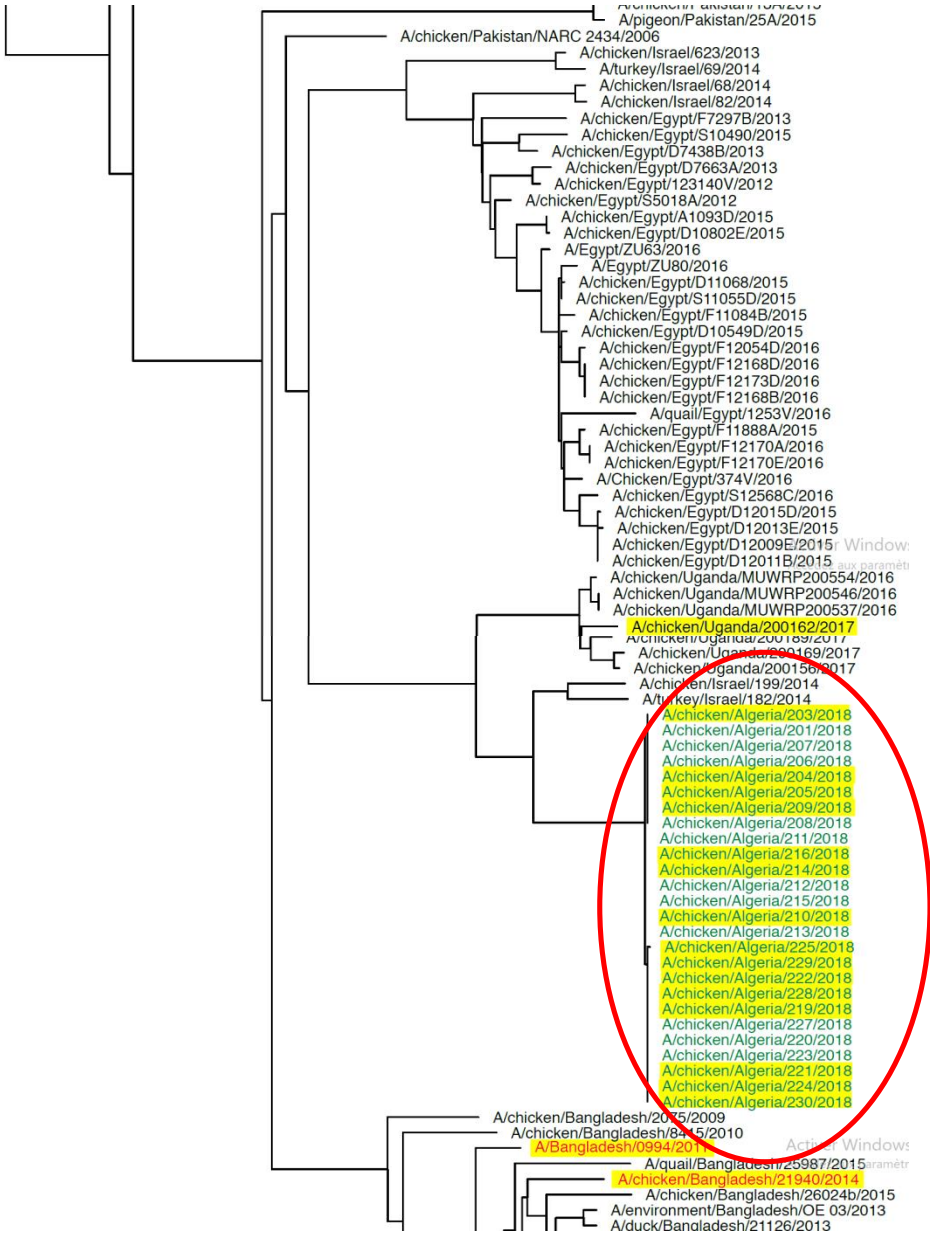


H9N2/G1 genotype

H9N2 Virus

Algeria Sequences

Candidate vaccine virus



MENA-ISN Objectives

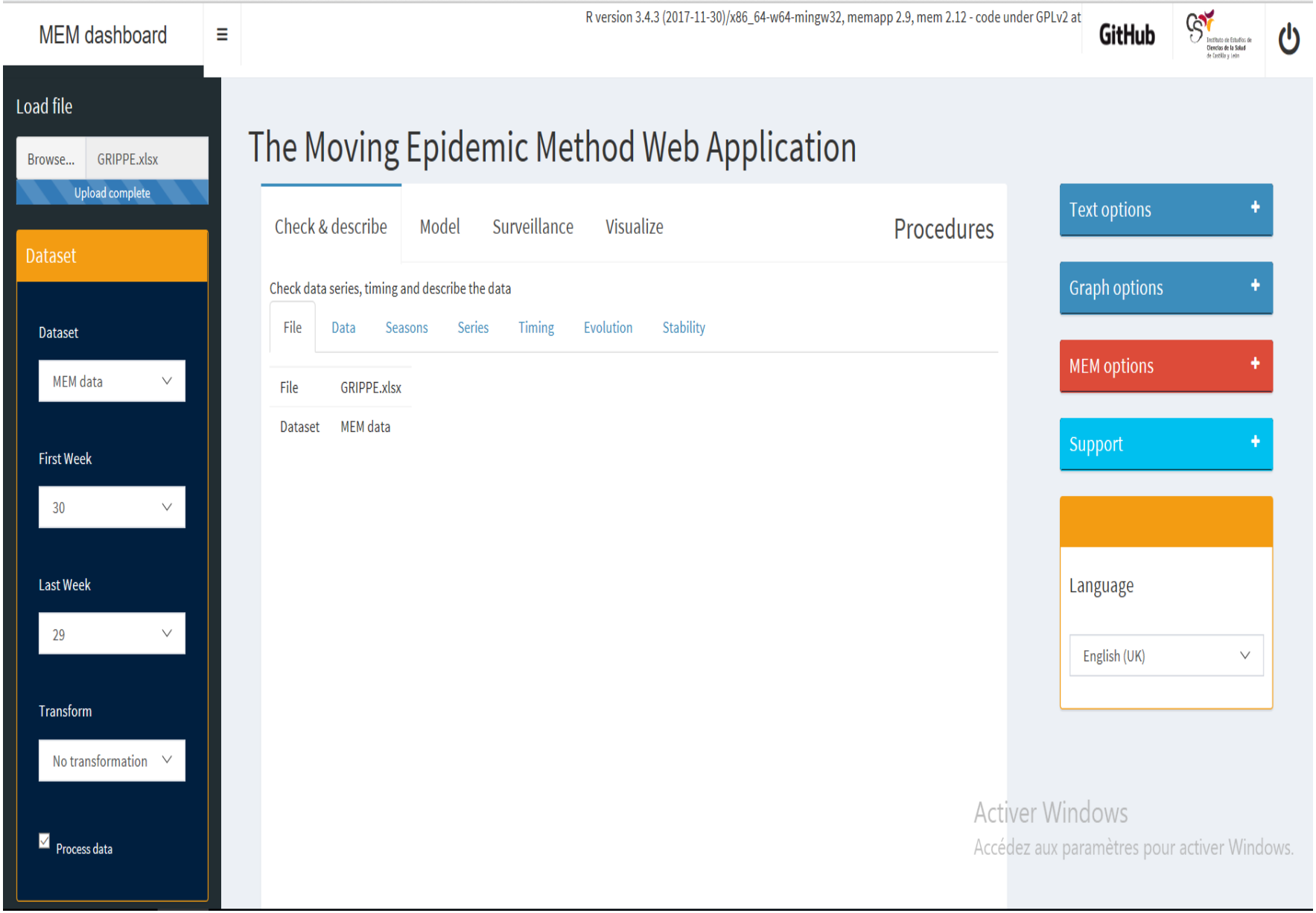
- Improve Surveillance and Disease Burden Data
- Increase the Evidence-based Communication on Influenza Burden and Benefits of Vaccination
- Increase the Number of Countries with Flu Vaccination in A National Immunization Program

Action Plan-ALGERIA

	Objectives	Actions	Challenges
2017-2018	▪ Estimate the incidence of Influenza In high risk populations : - Diabetics - Pregnant -Children ▪ Estimate severity of influenza ▪ Estimate vaccination rate among at risk groups	1 Strengthen and extend The Sentinel surveillance network (Enrollement include specific population) 2 Implement hospital based surveillance (SARI) in 4 identified sites (Pneumology/Infectiology & Critical Healthcare) **GISHN***	▪ Budget ▪ Recruitment ▪ MOH endorsement
	▪ Enhance national surveillance (data at national level) ▪ Circulation of influenza strains at national level ▪ Algerian Influenza Surveillance System	3 Workshop WHO/**PISA*** 4 Continue extend the current influenza sentinel network and SARI (2018-2019)	▪ Recruitment ▪ Laboratory network

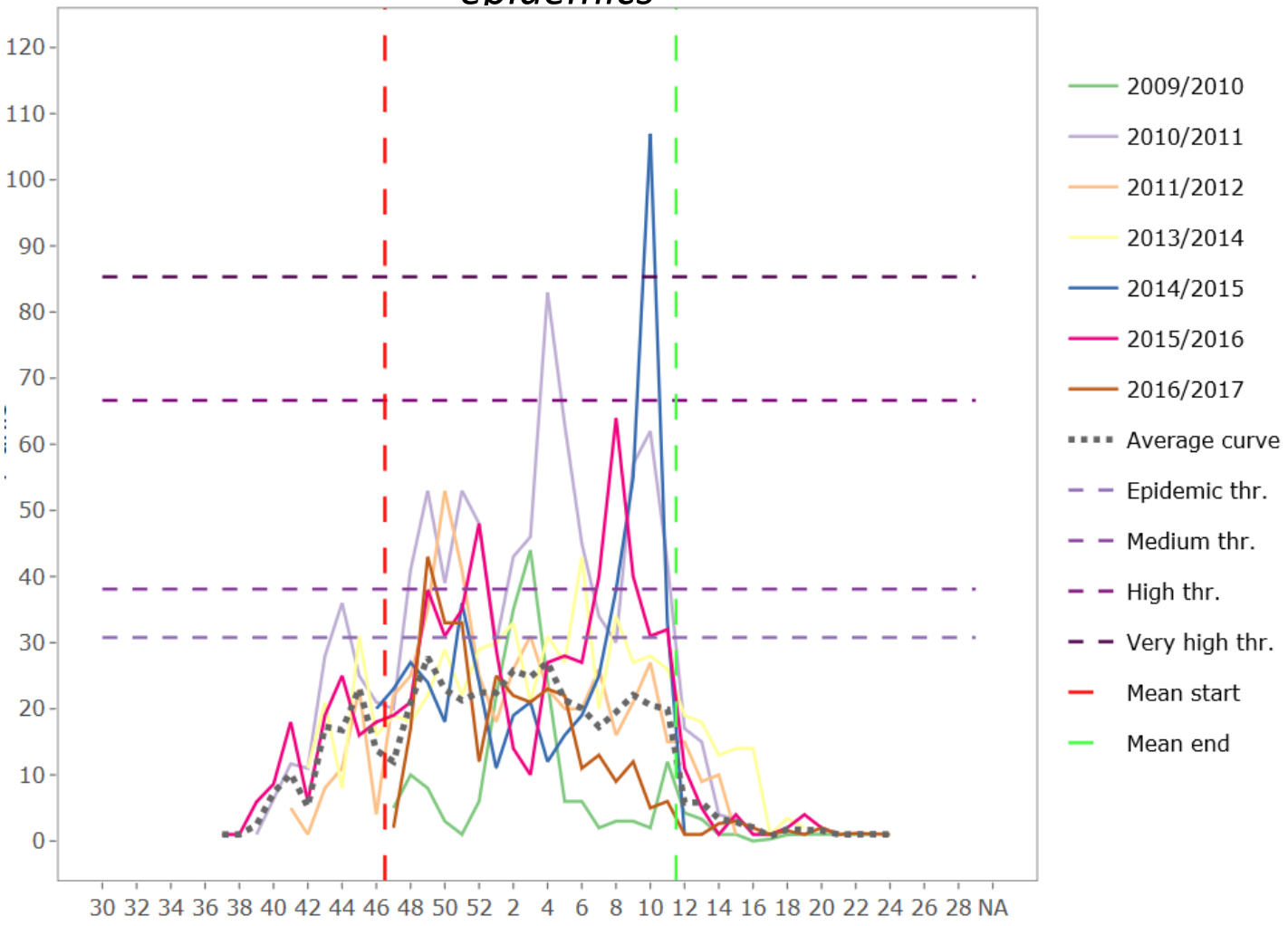
Action Plan-ALGERIA

	Objectives	Actions	Challenges
2017-2018	▪ Increase HCPs awareness on flu and flu vaccination ▪ Get HCPs engagement & commitment ▪ Regional perspective with WHO support	4 WHO Influenza and Severe ARI 05/2017	▪ Commitments of HCPs ▪ MOH support ▪ GISHN
	To communicate evidence based accurate information through media (Nominated persons involved in communication with media	4 Put Flu season in the agenda and sustain flu 5 Press conference for Influenza Vaccine campaign National Plan	• Media Involvement

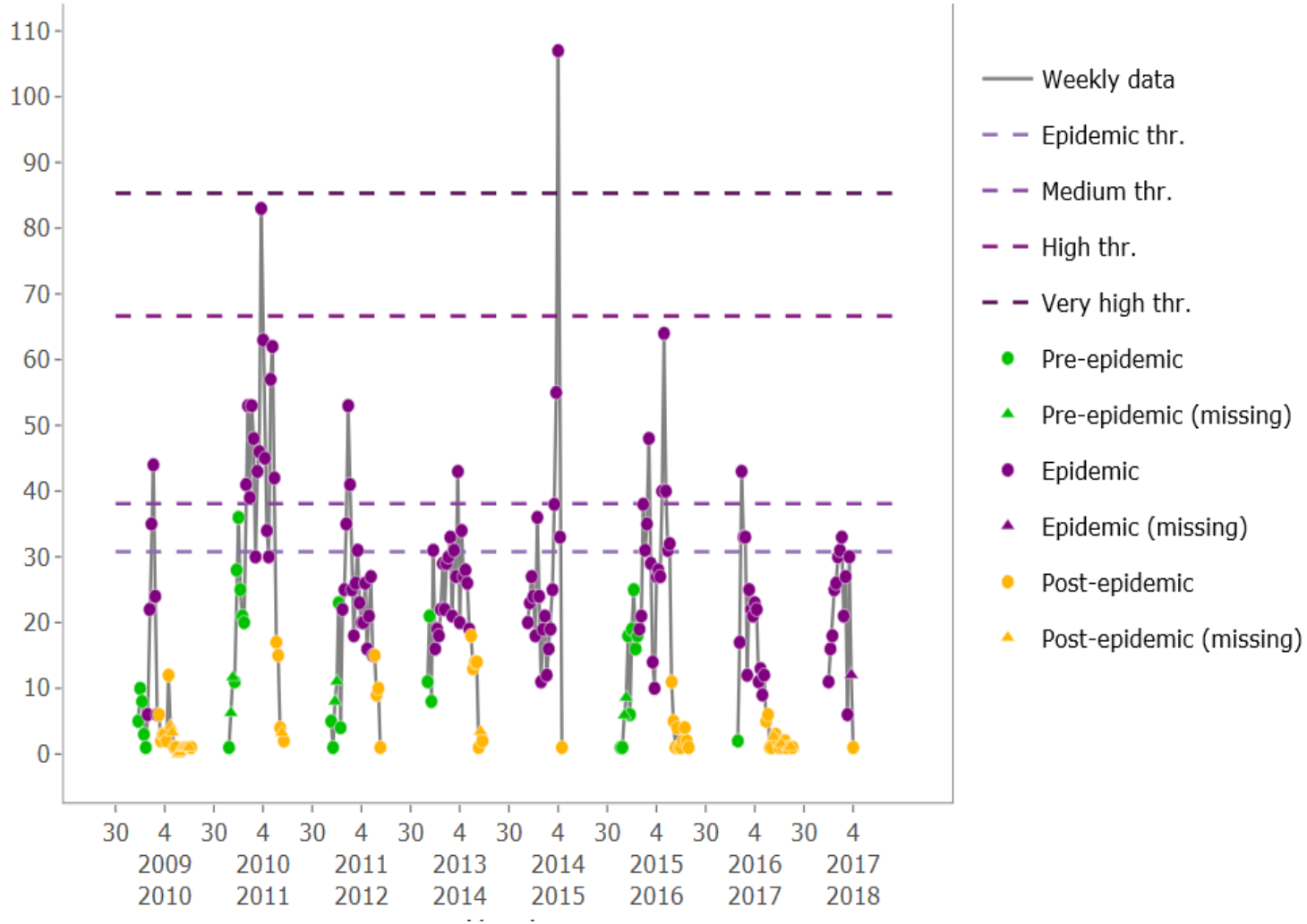


- Better understanding of the annual influenza epidemics
- Allows the weekly assessment of the epidemic status and intensity.

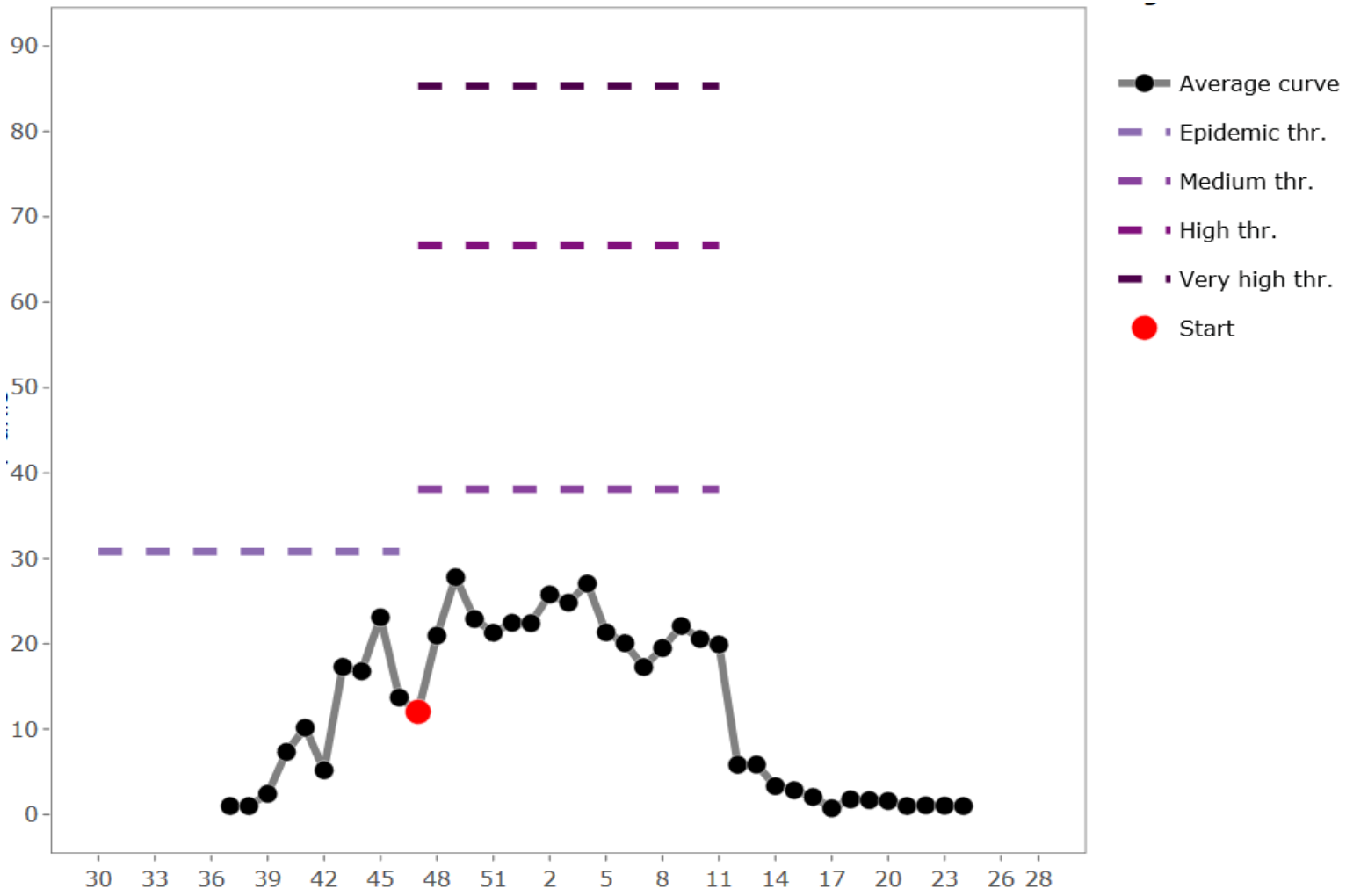
Compare magnitudes and timings of all epidemics, *model MEM moving epidemics*

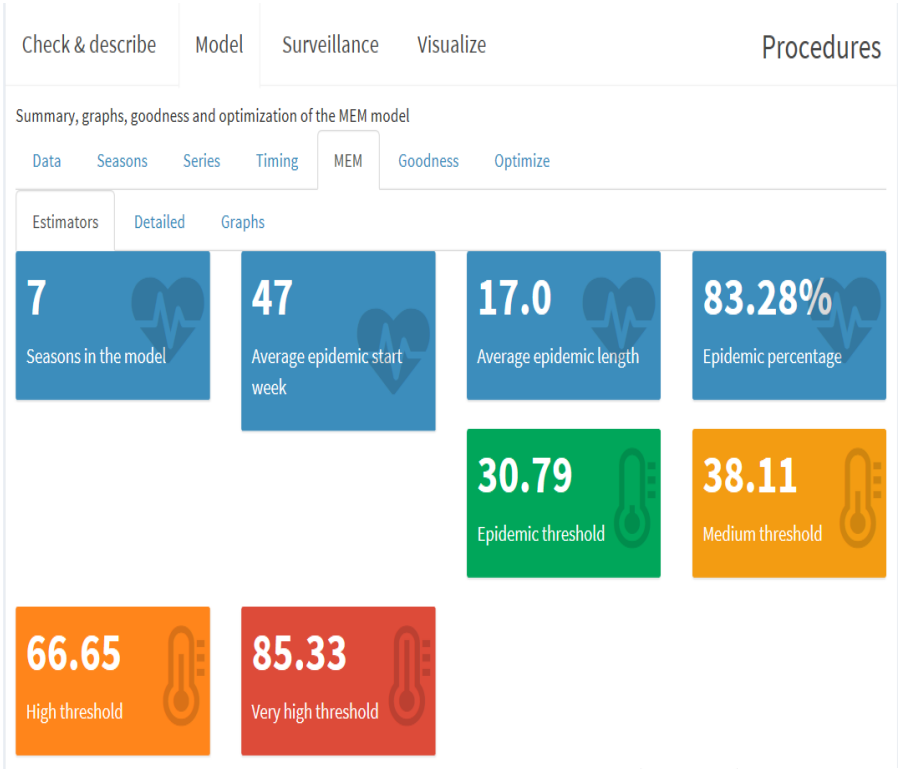


Algeria Flu Seasons



Model for Influenza Season in Algeria

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Procedures
Summary, graphs, goodness and optimization of the MEM model
Data
Seasons
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Timing
MEM
Goodness
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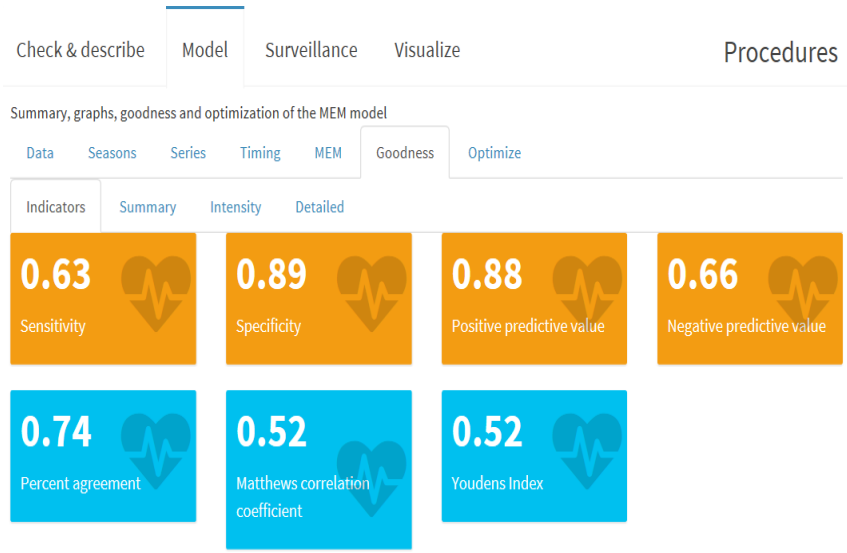
Estimators
Detailed
Graphs
7
Seasons in the model
47
Average epidemic start week
17.0
Average epidemic length
83.28%
Epidemic percentage
30.79
Epidemic threshold
38.11
Medium threshold
66.65
High threshold
85.33
Very high threshold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Intensity
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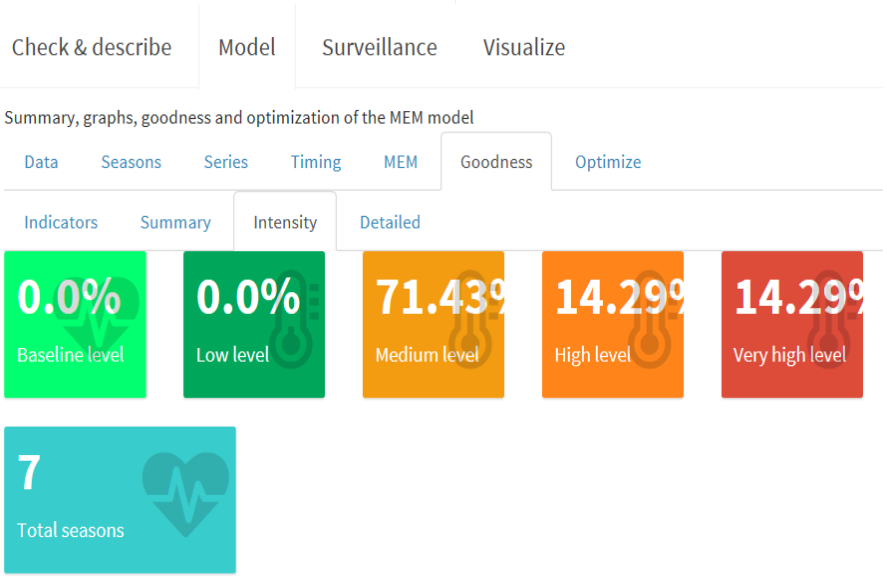
0.63
Sensitivity
0.89
Specificity
0.88
Positive predictive value
0.66
Negative predictive value
0.74
Percent agreement
0.52
Matthews correlation coefficient
0.52
Youdens Index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0.0%
Baseline level
0.0%
Low level
71.43%
Medium level
14.29%
High level
14.29%
Very high level
7
Total seasons

Algeria Pilot Study (2018-2019)

Global Influenza Hospital Surveillance Network

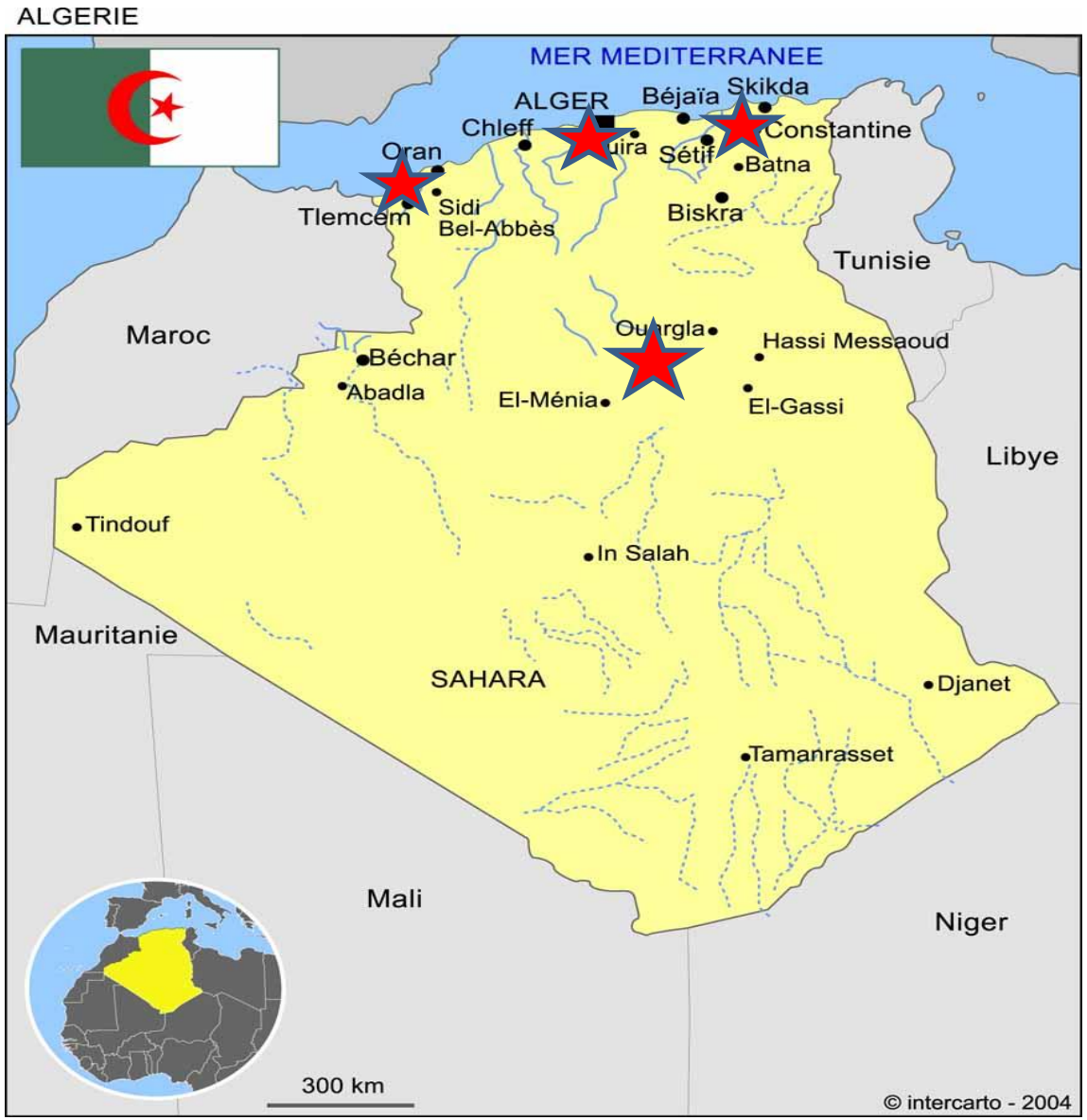
Global Influenza Hospital Surveillance Network
(GIHSN)
Core questionnaire
Patients 5 years of age or more

- Network of country sites affiliated with health authorities coordinating several hospitals and using a standardized surveillance protocol
- Yearly assessment of: (i) influenza virus circulation,(ii) lab-confirmed severe flu burden (iii) vaccine protective effect (when coverage allows).
- Building of a surveillance platform trough catalytic funding from the foundation for Influenza Epidemiology

- **More than 70 hospitals in 20 countries (21 sites) in 2017-18 season.**
- **More than 2,500 documented cases of hospitalizations from influenza in the 2016-17 season**
- **Already 6 consecutive seasons of data generated including NH and SH data**

Participant countries

Algeria Pilot study (SARI)



- TC : *Approved*

- 04 sites :
  - **Algiers*
  - **Oran*
  - **Setif*
  - **Biskra*

- *Workshop for Investigators before 15th of May*

- *Start : 01 July 18*

Global Respiratory Hospitalizations Influenza Proportion Positive (GRIPP)/CDC

Project Summary: Global Respiratory Hospitalizations – Influenza Proportion Positive (GRIPP)

Background and Significance:

Global and regional estimates of the burden of influenza are an essential tool for demonstrating the contribution of influenza to respiratory hospitalizations. These estimates leverage data from existing platforms to generate benchmarks to guide influenza prevention and control strategies, particularly in settings with limited influenza surveillance among inpatients. Disease burden data also underscore the value of existing national vaccination programs.

- This project will generate pooled meta-analytic estimates of the proportion of respiratory hospitalizations attributable to seasonal Influenza among Adults. (Mid-2018)

- Stratified by age group, geographic region, and country income status.

- Among children (done) : "Global Respiratory Hospitalizations – Influenza Proportion Positive" (GRIPP) project, published in PLOS Medicine (Lafond KE et al, 2016)

REPUBLIQUE ALGERIENNE DEMOCRATIQUE ET POPULAIRE

Projet

PLAN NATIONAL DE COMMUNICATION SUR LES RISQUES SANITAIRES

Décembre 2017

National Communication Plan Dec 2017

Received: 24 September 2017 | Accepted: 19 December 2017
DOI: 10.1002/jmv.25029

RESEARCH ARTICLE

WILEY JOURNAL OF MEDICAL VIROLOGY

Surveillance for antiviral resistance among influenza viruses circulating in Algeria during five consecutive influenza seasons (2009-2014)

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Influenza season 2007/2008 was marked by a worldwide emergence of oseltamivir-resistant A(H1N1) viruses possessing a mutation in the neuraminidase gene causing His-to-Tyr substitution at amino acid position 275 (H275Y). These strains were isolated in Algeria where 30% of seasonal A(H1N1) viruses harbored the H275Y mutation. Emergence of resistant viruses to currently approved antiviral drug determined the need for antiviral susceptibility monitoring in Algeria especially that oseltamivir is currently used in hospitals of some provinces of the country for treatment of influenza in populations at risk. The aim of the present study is to investigate the sensitivity of circulating influenza viruses in Algeria to oseltamivir. We present 5-year local surveillance results from 2009/2010 influenza season to 2013/2014 influenza season. We tested the sensitivity to oseltamivir of 387 human influenza A and B viruses isolated in Algeria. Determination of IC_{50} values were performed using the fluorogenic MUNANA substrate. To detect the H275Y mutation in the neuraminidase of the A(H1N1) strains we performed a real-time RT-PCR allelic discrimination analysis. The obtained results showed that all influenza A(H1N1)pdm09, A(H3N2), and B viruses studied remained susceptible to oseltamivir. This is the first study on influenza antiviral susceptibility surveillance in Algeria. Obtained results allow establishing a baseline data for future studies on antiviral resistance emergence worldwide. Our report highlights the importance of a continued and active monitoring of circulating viruses in Algeria for strengthens collaboration within the Global Influenza Surveillance and Response System.

KEYWORDS
H275Y mutation, influenza virus, oseltamivir, resistance

1 | INTRODUCTION

Influenza is an infection of the upper respiratory tract that causes significant morbidity and mortality. Influenza viruses circulate and spread easily from person to person through droplets and aerosols released into the air when coughing or sneezing.[1] Every year influenza causes outbreaks throughout the world and can seriously affect all populations.[2] In Algeria, influenza is considered as a serious public health problem. Monitoring of seasonal influenza is ensured by a sentinel surveillance network called GROG (Groupe Régional

