USE OF INFLUENZA DUPLEX PCR RESPONSE TO INFLUENZA PANDEMIC AND EPIDEMIC SURGE IN A HOSPITAL VIROLOGY DEPARTMENT.

Bouscambert M [1.2], Casalegno JS [2.3], Valette M [1.2], Billaud G [2], Frobert E [2.3], Escuret V [1.2.3], Mekki Y [2], Morfin F [2.3], Lina B [1.2.3]

1 Hospices Civils de Lyon, Centre National de Référence virus influenza France Sud
2 Laboratoire de Virologie Est, Bron, France ; 3 Université de Lyon, Université Lyon 1, Faculté de Médecine Lyon Est, VirPatH EA 4610, Lyon, France.
Contact: maude.bouscambert-duchamp@chu-lyon.fr

BACKGROUND

During the 2012-2013 Influenza season, the Lyon hospital virology department received an average of 6000 respiratory samples *i.e* as much as during the 2009 pandemic. In 2010 we moved from in-house real-time PCR to the Argene-bioMérieux Respiratory MWS (multi well system) r-gene™ system Duplex Real-time PCR allowing always with 5 PCR the detection of 9 viruses (see Materials and Methods).

OBJECTIVES

To respond to quick expand of the surge capacity of the laboratory, we wanted to check if we can notice, after the introduction of the **Argene-bioMérieux Respiratory MWS r-gene™ system** any improvement of:

1/the **quality** of respiratory viral infection diagnosis according to the panels of respiratory viruses we could detect between 2009 and 2013 and to the turn around time (TAT) for Flu and others viruses.

2/the **cost-effectiveness** of the new diagnosis panel measured by completion of the microwells in the reaction plate, and the cost for the detection of Flu, the 5 virus and the 7 virus panel per sample.

To answer these questions we compared two representative weeks of 2009 and 2013 Flu seasons.

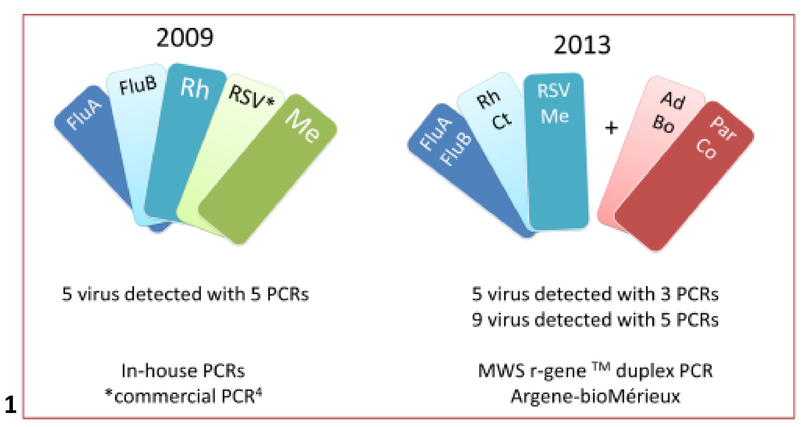
Just Flash the Poster !

MATERIALS & METHODS

Figure 1: representation of the panels of viruses detected by either the in-house or commercial PCR (**FluA** influenza A, **FluB** influenza B, **Me** Metapneumovirus, **RSV** Respiratory Syncytial Virus, **Rh** Rhinoviruses, **Bo** Bocavirus, **Par** Parainfluenzaviruses, **Co** Coronavirus, **Ad** Adenovirus).

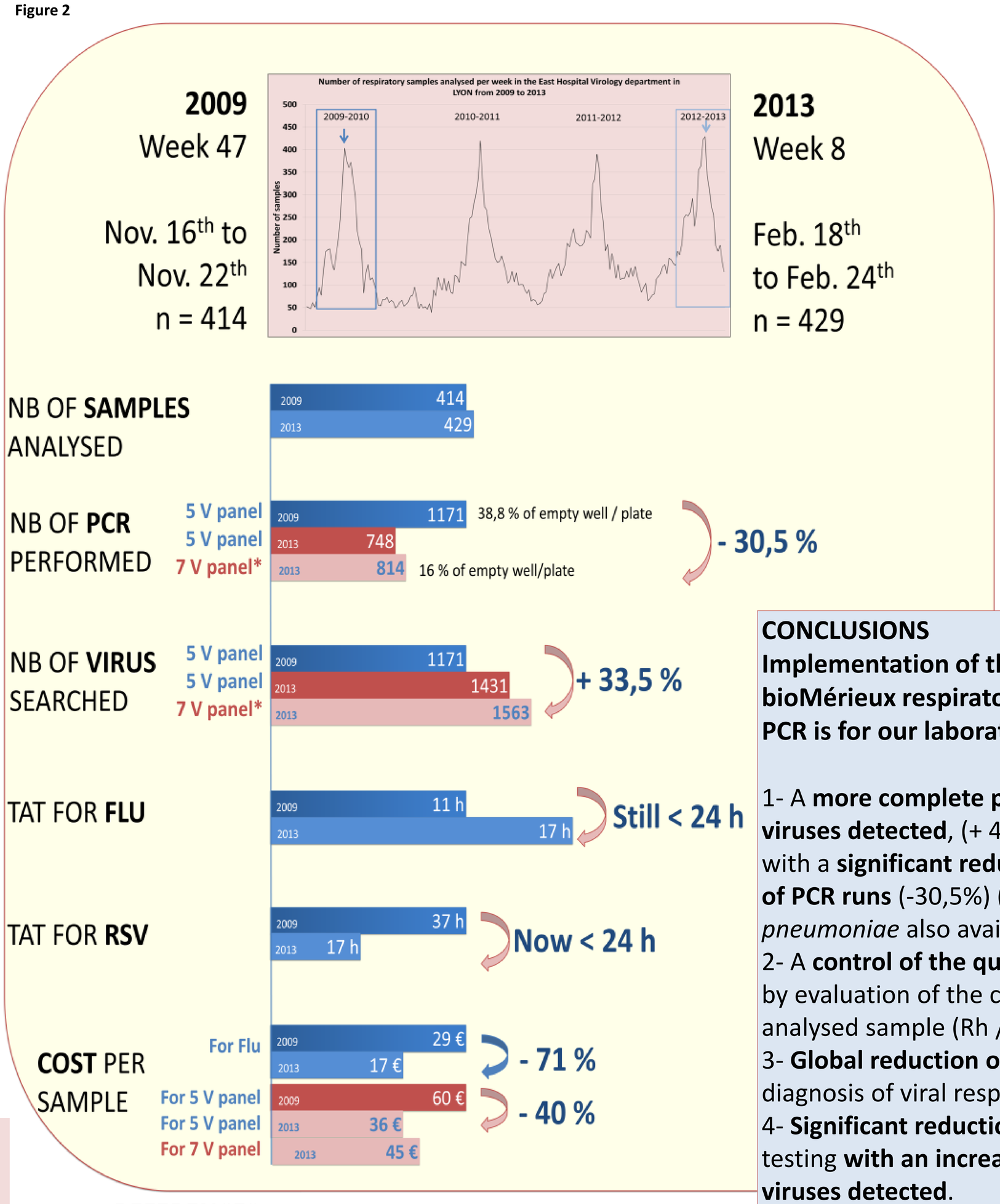
Figure 2: comparison of the activity during the influenza peak weeks in 2009 and 2013
* In 2013 we already had the MWS r-gene™ duplex PCR for the detection of Par/Co but we didn't have any prescription during these 2 weeks.

Figure 1



RESULTS

Figure 2



The Virology department receive an average of 6000 respiratory samples a year for **molecular diagnosis** using 3 NucliSens® easyMAG™ and 4 AppliedBiosystems 7500 Real-Time PCR Systems. Before 2010, we used 4 in-house PCR assays(**FluA[1]**, **FluB[2]**, **Me[3]**, **Rh[4]**) and 1 commercial PCR kit (**RSV[5]**). Each PCR program was different and did not allow the detection of more than one virus at the same time. In 2010, we introduced in the lab the **Argene-bioMérieux Respiratory MWS r-gene™ system(FluA/FluB; RSV/Me; Ad/Bo; Par/Co, Rh/cell control**. All these PCR are performed in 96 well plates with the same PCR program.

The TATtime was defined as the time spent between registration of the sample and the transfer of results to the clinicians.

CONCLUSIONS

Implementation of the Argene-bioMérieux respiratory MWS r-gene™ PCR is for our laboratory:

1- A **more complete panel of respiratory viruses detected**, (+ 4 viruses / +33,5%) with a **significant reduction of the number of PCR runs** (-30,5%) (Rq: + M. and C. *pneumoniae* also available).
2- A **control of the quality of the sample** by evaluation of the cells quantity in each analysed sample (Rh /Ct duplex).
3- **Global reduction of the TAT time** for diagnosis of viral respiratory infections
4- **Significant reduction in the cost** of the testing **with an increase in the number of viruses detected**.

REFERENCES

[1]Bouscambert D M. Clin Microbiol Infect, 2010 , [2] Protocol provided by CDC, [3] Bouscambert D M. J Clin Microbiol. 2005, 4] RSV A/B r-gene® Primers/Probes Argene,[5] Protocol provided by CDC