The Respiratory Virus Network - an initiative to collect and provide data on respiratory virus diseases via internet

Kati Kaiser1, Elena Knops1, Maria Neumann-Fraune2, Monika Thirman-Wegs1, Barbara Gärtner3, Ortwin Adams4, Rolf Kaiser1, Elena Knops1, Maria Neumann-Fraune2, Monika Thirman-Wegs1, Barbara Gärtner3, Ortwin Adams4

1Institute of Virology, University of Cologne, 2Institute of Microbiology, University Hospital of Saarland, 3Institute of Virology, University Hospital Düsseldorf

Background

The Respiratory Network was founded in 2009 on the initiative of the section “Clinical Virology” of the “Gesellschaft für Virologie”. Meanwhile more than 40 laboratories from Germany, Austria and Switzerland and Netherlands are members of the network. Using an online platform, the following data are collected: positive and negative results of respiratory virus tests, kind of detection method, and - optionally - basic patient characteristics. Molecular techniques, e.g. multiplex PCRs in form of real time or Luminex-approaches are meanwhile state of the art. Most of the samples are nasal swabs taken with commercially available taked swabs in transport medium (e.g. eNAT from COPAN, Brescia, Italy). Subtyping of viruses is performed in specialized centers. Most of the samples tested derived from hospitalized patients. The members have direct and real-time access to the cumulated data. An open access to the platform is about to be launched.

Meanwhile data of more than 150,000 samples are in the database. Seasonal variations of the beginning, intensity and end of virus activities could be found not only for influenza viruses but also for viruses which are not routinely documented in other surveillance programs, like RSV, HMPV and human Coronaviruses. As data of the RSV-epidemiology are of special interest for the RSV-prophylaxis with Palivizumab in preterm infants, we closely observe the possible beginning of the RSV-season. On that account the prediction for the upcoming RSV season is possible.

The Respiratory Network has proven to be a powerful tool in synergy to previously established surveillance systems of national health authorities in Germany. While the latter are focused on Germany and mainly collecting data on influenza viruses from outpatients in Germany, the spectrum of the members and the spectrum of viruses is broader in the Respiratory Network, most samples derive from inpatients and the data are collected also from Austria, parts of Switzerland and Netherlands. Since September 2014, the network extended the spectrum of respiratory pathogens to bacteria (Mycoplasma pneumoniae, Chlamydia pneumoniae, Bordetella pertussis and others) under the guidance of bacteriological experts. A similar tool for the surveillance of gastroenteritic pathogens is in preparation.

Characteristics

- established by members of the Clinical Virology section of the “Gesellschaft für Virologie” (GfV)
- collecting data on the detection rates of respiratory viruses on different sites in Germany, Austria, Switzerland and Netherlands
- information about the methods and basic characteristics of patients are included
- monthly statistics and comments are distributed among the participants
- online updated geographic map of the activity of each respiratory virus at a given time point
- meanwhile more than 150,000 tests of 58,000 patients are collected
- main focus: frequency of respiratory viruses in hospitalized patients ("inpatients")
- supplement the existing surveillance systems which usually focus on community acquired respiratory infections ("outpatients")
- data base and services are provided by Medeora

Conclusions

- Molecular diagnostic tools are now available to assess the impact of respiratory viruses (viral load, importance of coinfections)
- Not all what looks like flu is flu! Other respiratory viruses have a high impact
- Not every virus that we find is a cause of disease
- The RespVir Network is an instrument to get an online-insight into the epidemiology of respiratory viruses
- The more members join to it the better it will work!