

Validation of Data from Medical Registrations in The Netherlands for Syndromic Surveillance Use: Comparing Respiratory Syndromes with Laboratory Surveillance

Liselotte van Asten M.Sc., Kees van den Wijngaard M.Sc., Hans van Vliet M.D., Wilfrid van Pelt Ph.D., Marion Koopmans M.D. Ph.D.

National institute of Public Health and the Environment, Bilthoven, The Netherlands

OBJECTIVE

To study if syndromic surveillance would have an added value over existing surveillance systems, we retrospectively evaluated whether known trends in respiratory pathogens are reflected in medical registrations in the Netherlands when using respiratory syndrome groupings.

METHODS

Medical registration data from 1999-2003 (or part of this period) were obtained from 4 registration systems:

- 1) Registration of signs, symptoms and medication for patients visiting general practitioners (2001-2003), coverage: 1-2%
- 2) Hospital discharge diagnoses: coverage: 99%, main and secondary diagnoses.
- 3) Causes of death registration, coverage: 100%.
- 4) Laboratory requests and results from electronic laboratory surveillance: coverage: 16%.

A non-specific respiratory syndrome was defined for each registration using the CDC syndrome grouping of ICD9 codes as a guidance after translating the codes to the coding systems used in the medical registrations. Known laboratory trends of respiratory pathogens (Respiratory syncytial virus (RSV), influenza, S.pneumoniae) from the same 5 year period were abstracted from the classical laboratory surveillance (counts of positive results for common pathogens) which is conducted on a prospective basis. Comparisons of temporal trends in respiratory syndromes with the laboratory confirmed seasonal trends for specific pathogens were evaluated visually and by calculating (lagged) correlations.

RESULTS

Visually, seasonal variation in all three laboratory pathogens is reflected in the respiratory syndrome in all four medical registrations. The respiratory syndromes generally resembled the overall laboratory determined seasonal trends in S. Pneumoniae whereas peaks in Influenza and RSV isolates were reflected in the respiratory syndrome during specific time periods. The laboratory determined RSV seasons usually preceded the laboratory determined influenza season and these two separate trends were clearly and separately reflected as separate peaks in

the GP respiratory syndrome and also, but to a lesser extent, in the hospital data. A recurrent elevation in respiratory syndrome in GP data during the autumn months which did not coincide with any known laboratory elevation is seen consistently each year (fig1). These recurrent elevations were visible in several of the separate diagnoses which are included within the GP respiratory syndrome group. In the hospital data such unexplained elevations were not clearly visible in the respiratory syndrome but were clearly visible, in most years, in the separate discharge diagnoses of pneumonia not otherwise specified and of acute laryngitis.

None of the respiratory syndromes seemed to clearly precede laboratory elevations (visually or via increased lagged correlations) although this aspect needs further exploration.

CONCLUSIONS

Known laboratory determined seasonal peaks of S. Pneumoniae, RSV and influenza associated illness were reflected in all four registrations. In addition, an unexpected increase in the occurrence of the respiratory syndrome was seen consistently in GP data each year, and preceded the known seasonal peaks of respiratory disease caused by influenza and RSV. We conclude that all 4 data sources may prove useful for prospective syndromic surveillance.

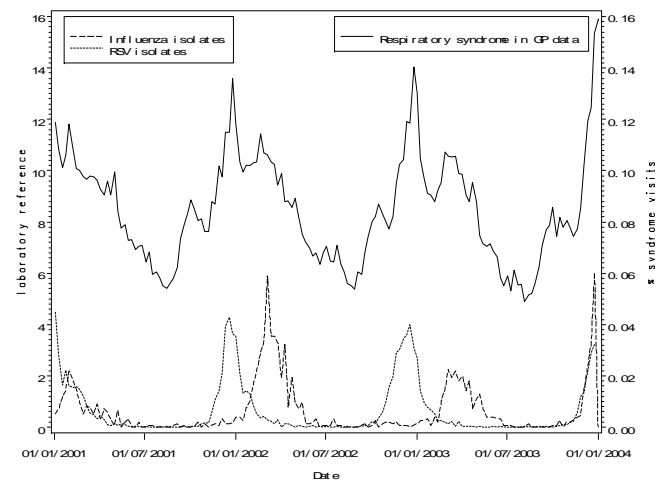


fig1. Respiratory syndrome (GP data) vs RSV and influenza laboratory trends