BACKGROUND

- Rotavirus (RV) is the leading cause of acute gastroenteritis (AGE) in infants and young children worldwide.
- Recent hospital-based surveillance shows RVGE to place high demands on European healthcare systems, accounting for 21–38% of hospitalizations and 32–82% of ER visits due to community-acquired AGE in children aged <5 years.
- Surveillance for Primary Care Centers for Rotavirus Infections in Kids (SPRINK) was undertaken to estimate the burden of RVGE leading to a general practitioner (GP) pediatrician visit among European children aged <5 years and to assess family transmission patterns of RV.
- Data generated by the study will be useful for policy makers in determining the need for implementation of RV vaccination in their countries.

METHODS

- This was a prospective study involving 88 GP/pediatrician practices covering well-defined populations in 6 European countries (Czech Republic, Germany, Italy, Poland, Spain and the UK).
- The primary study objective was to estimate the incidence of RVGE leading to a GP/pediatrician visit among children <5 years of age in well-defined populations.
- Secondary objectives were to: determine age, disease severity, and seasonal distribution of RVGE among children <5 years of age.
- Identify prevalent RV genotypes among children <5 years of age.
- Assess transmission patterns of RVGE among household children <5 years of age.
- Practices were selected at convenience based on existing medical practice networks. In each country, a GP/pediatrician network was selected which covered a surveillance population of 5,000–10,000 children <5 years of age in towns/municipalities with well-established boundaries.
- All children aged <5 years who were defined the population presenting with AGE were screened for recruitment and their parents/carers asked for written informed consent for stool sample collection and testing.
- AGE was defined as diarrhea (≥3 loose stools/24h) for less than 48 hours.
- Stool samples were screened in the physician’s office for the presence of RV using a rapid stool diagnostic test (Rota-Strip, Coris Biocentr B.V., Belgium).
- If a stool sample was not available for testing at the time of the initial visit, parents/carers were asked to provide a stool sample within 4 days.
- All RV+ samples were confirmed and characterized in the same reference laboratory using a RT-PCR-based method to determine RV G and P types.
- RV+ children were enrolled for study participation and parental interview. Parents were contacted by phone 14 days after the study visit to obtain follow-up information on disease outcome.
- Parents of enrolled children who had other children aged <5 years in the household and who gave their written consent were asked to contact the GP/pediatrician if any of these other children developed AGE within 14 days of enrollment of the study subject.
- A study nurse was dispatched to the household or parents visited the GP/pediatrician and a stool sample was collected from the sick child.

RESULTS

- Study population and proportion of PCR+ cases:
  - From October 2005-May 2007, 5009 children aged <5 years presenting with AGE were screened for study participation. Of these, 4093 were tested with Rota-Strip, 590 of whom were RV+ (14.4%).
  - The number of cases varied considerably between countries, being highest in Spain and lowest in Italy.
  - A total of 518/5009 children (10.3%) were RV+ by PCR. This proportion varied between countries, ranging from 1.7% in the UK to 18.8% in Spain (Table 1).

- A total of 509 PCR+ subjects were eligible for inclusion in the per protocol analysis. Mean (±SD) age was 20±13.3 months and 48.5% were female.
- In all, 69.1% of PCR+ RVGE occurred in children aged <2 years, 30.1% in those aged <1 year and 6.9% in infants aged <6 months (Fig. 1).
- Table 1. Proportion of cases who were RV+ by PCR

- The number of cases varied considerably between countries, being highest in Spain and lowest in Italy.
- A total of 509 PCR+ children were enrolled for study participation and parental interview.
- The percentage of primary RVGE leading to secondary disease among household children aged <5 years varied between countries and was as high as 38.5% in the Czech Republic.

CONCLUSIONS

- This is the largest European study to assess the burden of RVGE in outpatient settings and household transmission patterns to date.
- Results show the burden of RVGE to be high among children aged <5 years visiting primary care centers for AGE, with RV accounting for 10.3% (7.7–18.8%) of all AGE cases.
- As in other recent European surveillance studies,4 disease burden appears greatest among the youngest children with 69.1% of all RVGE occurring among children aged <2 years and 30.1% in those aged <1 year.
- RV G and P types identified were similar to other recent studies in Europe.
- These findings provide evidence that RVGE disease burden is considerable among outpatients and supports the concept that early RV vaccination may have a major impact in reducing RVGE morbidity in Europe, as well as providing a useful baseline indicator for RV burden for assessment of vaccine impact.

REFERENCES