Background. Nosocomial respiratory viral infections (NRVIs) cause morbidity in pediatric patients. Optimal measures for prevention have not been established. In this study we evaluated the impact of enhanced isolation precautions (contact & droplet) on the incidence of NRVIs.

Methods. NRVIs caused by adenovirus, human metapneumovirus (hMPV), influenza, parainfluenza (PIV), respiratory syncytial virus (RSV), and rhinovirus/enterovirus (R/E) were prospectively monitored using laboratory-based surveillance with viral detection by nucleic acid amplification-based assay and standardized clinical definitions. The study period was 3 consecutive 12 month periods (July 2012-June 2013, July 2013-June 2014, and July 2014-June 2015). During years 1 & 2, special isolation precautions were as follows: hMPV, PIV, RSV, contact precautions; influenza, droplet precautions; adenovirus, contact & droplet precautions; R/E, droplet precautions during November through March, standard precautions April through October. During year 3, droplet precautions were in place for influenza and contact & droplet precautions were used for all other virus categories. The percent of single bedded rooms increased from 22% during year 1 to 36% during year 2 and 3, with the opening of a new pavilion with all single bedded rooms. A severe restriction on visitation by young children was in place November through March in years 2 and 3, but not during year 1. Comparisons of nosocomial infection rates were made using the incidence density ratio method.

Results. The rate of NRVI was 0.93, 0.88, and 0.48/1,000 patient days for years 1, 2, and 3, respectively, a 46% decrease during year 3 (P<0.005). For each virus category the rate of nosocomial infection was lower during year 3 than in year 1 or year 2, respectively. Comparisons of nosocomial infection rates were made using the incidence density ratio method. The overall NRVI rate during year 3 was 47% lower than the mean rate of years 1 and 2. Excluding rhinovirus/enterovirus the NRVI was 54% lower during year 3. The rate of nosocomial infection was lower during year 3 than during year 1 or year 2 for all viruses except influenza viruses. Lower rates were significant for adenovirus and RSV.

Limitations. • There are limited data on prevention of nosocomial viral respiratory infections (NRVIs).
• The aim of this study was to compare the rate NRVIs at a children’s hospital before and after implementation of more stringent isolation precautions.

Conclusions. • The burden of hospitalized children with viral respiratory infection was 40.1% and 19.6% higher during year 3 than in year 1 or year 2, respectively.
• Single center study
• Short duration (1 year) of intervention
• Potential for confounding variables
• The use of both contact and droplet precautions for inpatients with viral respiratory tract infections was associated with significant reductions in the incidence of NRVIs.