

### Outbreak investigations of double measles in a two highly immunized hilly areas of district Kangra, Himachal Pradesh, India, 2007

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**Background:** Measles is the fifth largest killer disease among children in the world. In September, 2006, a community leader/worker informed us about an increase in cases of fever and rash in some hilly villages of district Kangra. We investigated two sequential outbreaks of measles to confirm the diagnosis and to formulate recommendations for prevention and control.

**Methods:** We defined a case of measles as occurrence of fever with rash in a child aged six months to 17 years during 3rd September to 23rd November, 2006. We line listed cases and collected information on age, sex, residence, date of onset, symptoms, signs, traveling, treatment history and vaccination status. We described the outbreak by time, place and person. We estimated vaccine coverages and vaccine efficacies in the affected villages. We confirmed diagnosis clinically, serologically and through genotyping of the virus.

**Results:** We identified 69 case patients. Overall attack rates ranged between 4.2% and 6%. All cases were between 6 to 17 years. Age specific attack rate in 1st outbreak ranged between 1.7% to 13% in 6-15 years while in 2nd outbreak; it is 2.2 to 17.3%, highest in 11-17 years. No deaths or complications were reported. The epidemic curve was suggestive of typical propagated pattern. The 1st outbreak imported virus after an inter school game competition (Relative risk: 6.44%; 95% confidence interval: 3.81 – 10.91) followed by 2nd outbreak people exchanged foods in the festival in one infected village of 1st outbreak (Relative risk: 5.3; 95% confidence interval: 1.90 – 14.77;  $P < 0.001$ ). The calculated immunization coverage (93%) coincided nearly with administrative claims. We estimated vaccine efficacies to be 85% and 81% in 1st and 2nd outbreaks. 11/16 case-patients for measles IgM antibodies and 2/5 nasopharyngeal swabs were tested positive by PCR and D4 measles strain genotyped. Vitamin A supplementations were only in four villages.

**Conclusion:** Measles outbreaks were confirmed in high immunization coverage areas. We recommended second dose opportunity for measles and vitamin A supplementation to all the cases in Himachal Pradesh.

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### Higher prevalence of norovirus than rotavirus as cause of acute gastroenteritis in hospitalized infants of Concepcion, Chile

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**Background:** Norovirus (NoV) are the main cause of acute gastroenteritis (AG) worldwide because of their contagiousness, low infectious dose, environmental stability, rapid secondary transmission and genetic variability. In Chile, the role of rotaviruses as causative agent of AG in children is well established but the prevalence and clinical significance of Norovirus is unknown, because its clinic similarity with rotavirus and lack of diagnosis methods. We investigated the prevalence of NoV and Rotavirus (RV) in children with AG.

**Methods:** We collected stools samples from Dec.07 to Dec. 08 from 145 hospitalized children in the Regional Hospital GGB of Concepcion. As controls, we collected stools from 57 healthy infants from a day care center. A 71% of children with AG were infants (103) and 42 were children 2-14 yr old. For detection and typing of NoV genogroups GI and GII, we used a RTPCR with 3 specific TaqMan probes. RV presence were determined with a commercial VIKIA™ "Rota-Adeno" kit Biomerieux.

**Results:** In 103 infants we found 34% of NoV and 17.8% of RV. A 48% of them were hospitalized for AG and 52% were initially hospitalized for other causes. In the first group we found 32.7% NoV and 24.4% RV. The second group presented 35.2% NoV and 13% RV. In children 2 -4 yr old we found 9.5% of NoV and 11.8% RV. Children older than 4 yr old were negative for NoV and had 12% of RV. Only 2 healthy infants were positive for NoV (3.5%). Summer prevalence was the highest for RV at 27.3% and the lowest for NoV at 3%. Average prevalence was 48.5% for NoV and 13.4% for RV.

**Conclusion:** Main cause of AG in hospitalized infants in Concepcion was due to NoV. Prevalence of infection caused by NoV greatly exceeded that of RV, except in Summer. Younger children, less than 2 year old suffered most for NoV infection as compared with RV infection that equally affected all age groups. Norovirus were more likely to facilitate nosocomial infections (35.2%) as compared with Rotavirus (13%).

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### Lessons that human virology can acquire from studies on avian circo- and tumor viruses

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**Background:** Economically-poultry-significant avian viruses can also provide scientific insights in un-experimentable human topics. Virological studies in poultry reflect natural phenomena, as they replicate in commercial flocks, causing natural infections, natural