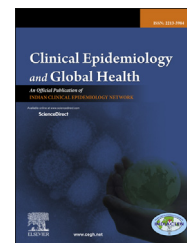




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## Original Articles

# Outbreaks of measles and chickenpox in eastern Uttar Pradesh, India



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## ABSTRACT

**Aim:** The sudden increase in number of cases of fever with rash at five sites in Uttar Pradesh, India was surveyed to establish the aetiology and investigate the extent of the disease.

**Methods:** We case defined, measles as a person with acute onset of fever, cough, coryza or conjunctivitis with maculopapular rash and a case of chickenpox as a person with acute onset of diffuse maculopapulovesicular rash. Blood samples were collected from clinically suspected cases and tested for anti-measles IgM/anti-VZV IgM and IgG antibody (depending on the clinical features) by ELISA. Detailed history was collected from each case including history of contact and immunization.

**Results:** Confirmed measles outbreaks were identified at 2/5 sites. There was neither any death nor any serious complications due to measles. However, varicella outbreaks were confirmed in 3/5 sites with one mortality.

**Conclusion:** Measles and chickenpox are still widespread in North India. Therefore, vaccination for varicella and better coverage of first dose and introduction of second dose opportunity for measles to susceptible population in affected areas is suggested.

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## 1. Introduction

Measles has remained a public health concern despite the enormous efforts of the World Health Organization/UNICEF to reduce the burden of disease. Worldwide, measles is the fifth killer disease among children under 5 years of age. The risk of illness and death is still prevalent in developing countries; more than 20 million cases are reported annually in parts of Africa and Asia<sup>1</sup> and about 69% of estimated global deaths occurred in countries of the WHO South East Asia Region (SEAR) in 2007.<sup>2</sup>

Of all viral diseases varicella has the highest contagiousity index with the secondary attack rate among susceptible household contacts of 65–86%. The disease is common in children and is considered to be a disease of benign course, though complications of different severity levels and with necessity of hospitalization have been reported. The varicella vaccine was licenced in the U.S. in 1995 and its 1 dose vaccination coverage in 2005 was 89%.<sup>3</sup> As a result, the varicella related morbidity and mortality declined significantly during these years. Chickenpox vaccination is optional in India, in the absence of vaccination, a progressive increase in seroprevalence with age has been found: maximum rates of seroconversion have been found in adolescents and adults.<sup>4</sup>

Several outbreaks of measles<sup>5,6</sup> and chickenpox<sup>7</sup> have been reported in different parts of the world and in India MeaslesNetIndia<sup>8</sup> investigated 52 measles outbreaks in geographically representative areas from 2005 through June 2010. From 4th April to 27th May 2011, newspapers reported a sudden increase in number of cases of fever and rash at five sites of Lucknow and Behraich districts of Uttar Pradesh, India of which two were in villages and three were at schools. The WHO advocates up-gradation of measles surveillance to case based surveillance in South East Asian countries to gather information on the susceptible groups and target supplemental immunization campaigns. Therefore, the grade 1 diagnostic viral laboratory at Department of Microbiology, K.G. Medical University, Lucknow conducted surveys to establish the aetiology and investigate the extent of disease of the reported outbreaks.

## 2. Methods

The investigation was carried at five sites in state of Uttar Pradesh, India, the details of which are given in Table 1. Temperature in the affected sites varies from 21–39 °C, with average 0.123 mm rainfall and 40–55% humidity during the month of March–May 2011. The investigation team of epidemic surveillance staff consisted of doctors, research scientists, research assistants and technicians covering field work, who were trained at National Institute of Epidemiology, Chennai, India, visited the Community health centres (CHC) of the affected areas. The team was escorted by the local doctors and community members to the houses of the reported cases at times. In addition a door to door survey was conducted to identify any unreported case. In schools the administrators were informed and active case detection was carried out throughout the school.

**Table 1 – Details of outbreak sites in Uttar Pradesh, India and attack rates of fever with rash.**

Site	Site name/district/CHC concerned	Latitude/Longitude/Altitude	Duration of outbreak	Vaccination coverage percent	Population in catchment area	No of cases affected	Attack rate (%)
Site 1	Arambha village/CHC Itaunja/district Lucknow	Latitude 27°4'55.6", Longitude 80°53'35.1", Altitude 135.5m	March–April 2011	52 (Measles)	850	16	2%
Site 2	Harsakri village/CHC Kumharwa/district Lucknow	Latitude 27°4'59.2", Longitude 80°58'12.4", Altitude 129.3m	March–April 2011	0 (Chickenpox)	85	5	5.9%
Site 3	Kasturba Residential school/CHC Behraich/district Behraich	Latitude 27°35'3.4", Longitude 81°35'53.1", Altitude 123.2m	April 2011	Unknown (Measles)	100	12	12%
Site 4	Madarasa Rashid-ul-ullum/CHC Itaunja/district Lucknow	Latitude 27°8'40", Longitude 80°54'42", Altitude 129.9m	April–May 2011	0 (Chickenpox)	50	12	24%
Site 5	Primary school at Terwa village/CHC Rahimabad/district Lucknow	Latitude 27°12'13.3", Longitude 80°44'45", Altitude 121.3m	April–May 2011	0 (Chickenpox)	41	16	39.1%

CHC: Community health centre.

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