



# ARENAVIRUS OUTBREAK IN JOHANNESBURG, SOUTH AFRICA SEPTEMBER 2008

## 1. BACKGROUND

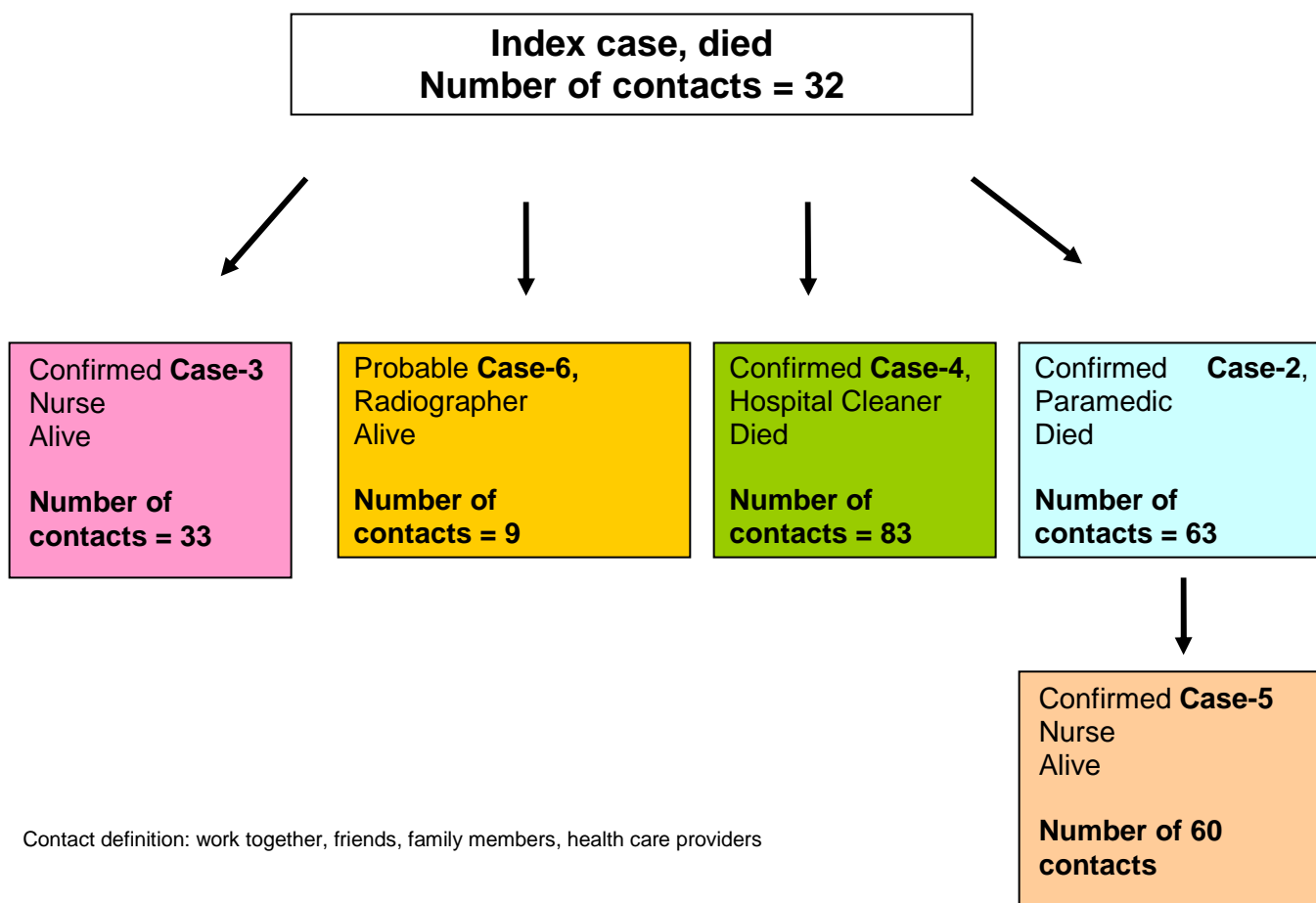
On the 27<sup>th</sup> of September 2008, a paramedic (**second case**) from Zambia was admitted at a private hospital in Johannesburg with severe headache, nausea and vomiting. The paramedic was treated for malaria in Zambia after complaining of fever. He did not improve and instead developed diarrhoea. He was flown to South Africa. However his condition deteriorated and he died on the 2<sup>nd</sup> of October.

The paramedic had earlier accompanied a female patient from Zambia (**index case**) to a private hospital in Johannesburg on the 12<sup>th</sup> of September. The woman had been suffering from fever, vomiting and diarrhoea, followed by rash, liver dysfunction and convulsions. She died on the 14<sup>th</sup> of September.

Three further cases were identified in October. One (**the third case**) was a hospital cleaner who had cleaned the hospital room occupied by the index case in the referred hospital. The cleaner died on the 6<sup>th</sup> of October. The **fourth case** was a nurse who had cared for the index case. She became ill with flu-like symptoms and was admitted in hospital on the 1<sup>st</sup> of October. Her condition deteriorated rapidly and she died four days later. The **fifth case** was a nurse who had cared for the paramedic (second case). This nurse was treated with ribavirin, which has been effective in patients with Lassa fever,

and she has since made a good recovery. She was the only one of the five to receive this treatment because the virus had been identified by the time she became ill. A sixth person (**probable case**), a radiographer who had taken X-rays of the index case was briefly admitted in hospital as a cautionary measure, she had no symptoms of the disease and was soon released, see schematic diagram below.

### Chains of transmission of arenavirus October 2008



Source: Department of Health, Provincial and National Outbreak Response Teams

## **2. LABORATORY TESTS AND RESULTS**

When the paramedic died (second case), a strong connection was made with the index case. A number of tests were set up at the Special Pathogens Unit of the National Institute of Communicable Diseases, including those for Ebola, Marburg, Lassa, Rift Valley fever and Crimean Congo haemorrhagic fever, but they yielded negative results.

Liver, skin and muscle biopsies were obtained and subsequent analysis of sequencing data of these samples generated at the Special Pathogens Unit of the NICD, the infectious diseases pathology branch of the Centers for Disease Control and Prevention (CDC) in Atlanta, USA, and the Columbia University in New York indicated that the outbreak was caused by a unique Old World arenavirus.

## **3. COORDINATION OF THE OUTBREAK**

The response was coordinated by the Provincial and National Outbreak Response, the National Institute for Communicable Disease, the World Health Organisation (WHO), CDC Atlanta and other partners in the private sector. The WHO liaised with counterparts in Zambia to trace contacts (including hospitals) to ensure prevention and control of any similar cases.

## **4. CONCLUSION AND LESSONS LEARNED**

The successful outcome of this outbreak had been as a result of strong teamwork of the Provincial and National Outbreak response Teams as well as the laboratories that were able to help identify this new species of Old World arenavirus.

The experience had also emphasized the need for extensive testing and gathering of case details. What was important in this outbreak was that the physician treating the second case also treated the first index patient, whom he had originally diagnosed as having 'tick-bite fever'. Nevertheless, he knew of a link between the two cases and sent off blood from the second case for viral haemorrhagic fevers testing.