



# Epidemiological Alert:

## Nosocomial transmission of NDM-type multiresistant bacteria

19 December 2012

The Pan American Health Organization (PAHO) / World Health Organization (WHO) recommends that Member States increase their efforts to implement prevention and control actions for infections associated with health care, due to the detection and local spread of multi-resistant microorganisms with New Delhi Metallo- $\beta$ -lactamase-type (NDM) antimicrobial resistance mechanisms in health services in countries of the Americas.

### Situation

Since 2008, there has been documented worldwide circulation of microorganisms with antimicrobial resistance mechanism, called "New Delhi Metallo- $\beta$ -lactamase" (NDM), which confers resistance, to all  $\beta$ -lactam antibiotics except aztreonam. These microorganisms are considered multiresistant because they have other mechanisms of resistance to  $\beta$ -lactam antimicrobial drugs, leaving very few therapeutic options for treating patients infected with these bacteria.

In the Americas, NDM producers microorganisms were detected during 2010 in the United States of America and Canada, in patients with a history of having received recent medical care in countries outside the Region.

In 2011 this resistance mechanism was detected in Guatemala in isolates of *Klebsiella pneumoniae* and the investigation found no connection with travel or international travelers. In June 2012, Uruguay reported the isolation of *Providencia rettgeri* with NDM-type carbapenemase. The three patients did not develop signs or symptoms of infection by this agent and were discharged. In August 2012, an outbreak of NDM producing *K. pneumoniae* was reported in six patients hospitalized in Bogota, Colombia. In November 2012, Paraguay reported finding NDM-type carbapenemase in isolates of *Acinetobacter baumannii* in hospitalized patients.

There was no history of recent travel abroad, by patients or immediate family members, in any of the events described.

Recently an article was published on the transmission of *Klebsiella pneumoniae* NDM-1 (New Delhi Metallo- $\beta$ -lactamase-1) in Canada, and risk factors for nosocomial transmission were identified using a retrospective analysis of cohorts.

Given these findings, PAHO/WHO emphasizes the recommendations made in the November 2011 Epidemiological Alert and highlights the importance of preventive measures and infection control in health care services, as well as monitoring and detection of this resistance mechanisms, which cause outbreaks and are associated with increased morbidity and hospital mortality.

## Recommendations

### Methods of surveillance and epidemiological research:

1. Increase the participation of laboratories in the surveillance systems for the early detection of outbreaks, for the purpose of early guidance of control measures.
2. Apply at the national reference laboratories level, the regional protocol for the detection of carbapenemases and immediately notify local infection control committees and the epidemiology department.
3. In case of suspected carbapenemases, send the suspected isolates to the national or regional reference laboratory, for confirmation and molecular typing.
4. Disseminate the information and recommendations to alert health workers and decision-makers at all levels.

### Laboratory Detection:

The first line of defense to contain these multiresistant pathogens includes the laboratories, along with adequate detection of the mechanism and prevalence research. Those responsible for decision making, both in control of infections committees and public health authorities, must be provided with information to alert other hospital centers.

The laboratories of the region integrated in the Latin American Antimicrobial Resistance Monitoring Network (ReLAVRA), have the tools for the phenotypical detection of NDM type carbapenemase. The strain is molecularly standardized in the same national reference laboratory, or it may be sent to a Regional reference Laboratory (for Latin-American, the National Institute of Infectious Diseases Dr. Carlos G. Malbrán, in Argentina).

### Antimicrobial treatment:

Limited clinical experience indicates that antibiotic combinations produce better results than monotherapy. However, it is not possible to issue a general recommendation of antimicrobial treatment due to the lack of solid evidence on its effectiveness. Because of the complexity of the treatment, infectious disease specialists must prescribe it.

### Infection prevention and control methods:

Strict administrative and technical measures for prevention and control measures against infections in hospitals are intended for patients who are colonized and with infection by the NDM pathogen.<sup>1</sup>

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<sup>1</sup> Infection control precautions in outbreaks of carbapenemases – producing bacteria. Prevention and control of infections in health care. Information available at:  
[http://new.paho.org/hq/index.php?option=com\\_docman&task=doc\\_view&gid=18671&Itemid=4130](http://new.paho.org/hq/index.php?option=com_docman&task=doc_view&gid=18671&Itemid=4130)

In addition to standard precautions, contact precautions should be applied and be reinforcement of hospital environment hygiene. In general, these precautions are to be maintained until the patient's discharge.

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**Recommendations:**

- Hand washing using water and soap or glycerinated alcohol.
  - Use of gloves and gowns for close contact with patients and for contact with secretions.
  - Isolation in individual room or cohort.
  - Cleaning the surroundings with chlorine (bleach) dilution (1:10).
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## References

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