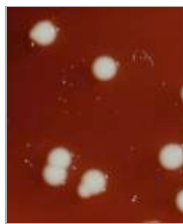


Friday 19 November 2010

Focus on 'New Delhi' superbug misplaced

Other bacteria with transferable drug resistance dominate in Europe



Blood agar plate growing colonies of *Klebsiella pneumoniae* bacteria.

Image credit: CDC

A group of superbugs that resist treatment with drugs given to patients as a last resort was thrust into the spotlight in August this year, when **researchers reported** cases of infection in the UK linked to patients returning to the country from parts of the Indian subcontinent.

Over the past two years, a total of 13 European countries have reported cases of infection with these *Enterobacteriaceae* bacteria, which successfully withstand treatment with most drugs by producing an enzyme dubbed New Delhi metallo-beta-lactamase 1 (NDM-1), write¹ Marc Struelens and colleagues in *Eurosurveillance* this week.

Although their data confirm that most patients had received treatment in India or Pakistan, they also suggest emerging transmission in hospitals within Europe. "Possible nosocomial acquisition accounted for 13 of 77 cases."

But the media attention on NDM-1-producing bacteria following the report of infections in the UK is misplaced, say experts from the European Centre for Disease Prevention and Control (ECDC) in an editorial² published in the same issue of the journal.

"Although NDM-1 has been the focus of media attention concerning antimicrobial resistance during the past months, it is neither the most frequently identified carbapenemase in Europe, nor the only carbapenemase associated with transfer of patients between countries," write scientists from the ECDC Antimicrobial Resistance and Healthcare-Associated Infections Programme.

Detection of carbapenemase-producing bacteria is worrisome because their capacity to produce these enzymes allows them to resist treatment with carbapenems, a class of strong antibiotics first used in 1985 and now considered the last-line therapy for infections with *Enterobacteriaceae* bacteria. NDM-1 is one of several carbapenemase enzymes deployed by bacteria in this group, mainly *Klebsiella pneumoniae* and *Escherichia coli*.

Outside Europe and the Indian subcontinent, reports suggest that infections with NDM-1 bacteria have been picked up in the USA, Canada, Australia, Japan, and Brazil. An **article** published online this month documents a case of infection with NDM-1 *K. pneumoniae* and *E. coli* in an elderly patient from Canada who spent 3.5 months in northern India.

Reports of these infections in patients around the world have heightened concerns because production of carbapenemases is encoded by a gene that can be transferred from species to species — raising the possibility that extensive drug resistance could spread as the superbugs take hold.

According to a separate article³ published in the journal, carbapenemases other than NDM-1 are more common in most European countries. "A genetically distinct strain of *Klebsiella pneumoniae* sequence type (ST) 258 harbouring the *K. pneumoniae* carbapenemases (KPC) has been causing epidemics of national and international proportions," write Hago Grundmann and colleagues.

A case of resistance gene transfer from KPC-producing *K. pneumoniae* ST258 to *E. coli* bacteria was **documented** earlier this year by Israeli medics who sounded an alarm over the public health consequences of this type of inter-species transfer of drug resistance.

K. pneumoniae carbapenemases first emerged in the mid-1990s in the US state of North Carolina, and have since spread across the country and overseas to Latin America, China, and European countries, according to Grundmann and colleagues. In 2009, medical scientists in New York **reported** two rare cases of infection with *K. pneumoniae* bacteria that proved resistant to all available antibiotics.

In Europe, the first transferable carbapenemase was identified in the late 1990s, and in 2003, *Enterobacteriaceae* bacteria that produce the VIM enzyme (Verona integron-encoded metallo-β-lactamase) began to spread in hospitals in Greece. The same carbapenemase was later detected in Spain before reaching other parts of Europe.

Surveillance data reviewed by Grundmann and colleagues suggest that depending on the country, Europeans will be exposed to a different mix of carbapenemase-producing bacteria. "Little is known about the patient-related risk factors other than hospitalisation abroad, but... producer strains seem to benefit from selective advantages in hospitals where antimicrobial use is much higher and opportunities for transmission more frequent than in the community," they note.

Because these bacteria are largely confined to infecting people in hospitals, the experts see an opportunity to prevent more extensive spread by targeting control efforts in these institutions with early detection, effective diagnosis, coordinated surveillance and good communication between countries.

References and link

1. Struelens MJ, Monnet DL, Magiorakos AP, Santos O'Connor F, Giesecke J, the European NDM-1 Survey Participants. New Delhi metallo-beta-lactamase 1-producing *Enterobacteriaceae*: emergence and response in Europe. *Euro Surveill* 2010, **15**:19716. [Article](#)
2. ECDC Antimicrobial Resistance and Healthcare-Associated Infections Programme. Antimicrobial resistance 2010: global attention on carbapenemase-producing bacteria. *Euro Surveill* 2010, **15**:19719. [Article](#)
3. Grundmann H, Livermore DM, Giske CG, Canton R, Rossolini GM, Campos J, *et al*. Carbapenem-non-susceptible *Enterobacteriaceae* in Europe: conclusions from a meeting of national experts. *Euro Surveill* 2010, **15**:19711. [Article](#)

[UK Health Protection Agency information](#) about *Klebsiella* species

[Print](#)[Close](#)

© Emerging Health Threats Forum 2008. All rights reserved. www.eht-forum.org