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Antimicrobial-Resistant Infections after Turkey/Syria Earthquakes, 2023

Appendix

Table. Characteristics of earthquake-associated infections with antibiotic-resistant pathogens

Earthquake location, date	Severity	Casualties	Key contaminants of earthquake-associated wounds
Marmara, Turkey, 1999	7.4 magnitude, affecting an area of 200 km × 40 km	17,480 deaths, 43,953 injured	<i>Acinetobacter</i> spp. and <i>Pseudomonas aeruginosa</i> resistant to carbapenems and sensitive to quinolones; methicillin-resistant <i>Staphylococcus aureus</i> (1)
Southeast Asia, 2004	9.1 magnitude, triggering a massive tsunami	310,000 deaths, millions destitute	MDR <i>Acinetobacter</i> spp.; ESBL <i>Escherichia coli</i> ; methicillin-resistant <i>Staphylococcus aureus</i> (MRSA); and <i>Aeromonas hydrophilia</i> , <i>Pseudomonas</i> spp., and <i>Candida albicans</i> (2).
Northern Pakistan, 2005	7.6 magnitude, with 140 aftershocks	>82,000 deaths, 3.3 million injured	MDR <i>Pseudomonas</i> spp., <i>Enterobacter</i> spp., and <i>Acinetobacter</i> spp. only susceptible to amikacin (3).
Wenchuan, China, 2008	8.0 magnitude	>69,000 deaths, 45.5 million destitute	MDR <i>Acinetobacter baumannii</i> , <i>Escherichia coli</i> , <i>Pseudomonas aeruginosa</i> and <i>Staphylococcus aureus</i> (4,5).
Central Italy, 2009	5.9 magnitude	308 deaths, >1,000 injured	Extensively drug-resistant <i>Acinetobacter baumannii</i> belonging to <i>A. baumannii</i> sequence type 2 with <i>bla</i> _{OXA-23} (6)
Haiti, 2010	7.0 magnitude	>100,000 deaths	Three <i>A. baumannii</i> isolates belonging to 2 distinct clones and were identified as ESBL producers and found to be <i>bla</i> _{CTX-M-15} -positive. They were resistant to penicillins, broad-spectrum cephalosporins and aztreonam but susceptible to carbapenems (7).

References

1. Öncül O, Keskin O, Acar HV, Küçükardali Y, Evrenkaya R, Atasoyu EM, et al. Hospital-acquired infections following the 1999 Marmara earthquake. *J Hosp Infect*. 2002;51:47–51. [PubMed](#)
<https://doi.org/10.1053/jhin.2002.1205>
2. Maegele M, Gregor S, Steinhause E, Bouillon B, Heiss MM, Perbix W, et al. The long-distance tertiary air transfer and care of tsunami victims: injury pattern and microbiological and psychological aspects. *Crit Care Med*. 2005;33:1136–40. [PubMed](#)
<https://doi.org/10.1097/01.CCM.0000163269.42524.50>
3. Kiani QH, Amir M, Ghazanfar MA, Iqbal M. Microbiology of wound infections among hospitalised patients following the 2005 Pakistan earthquake. *J Hosp Infect*. 2009;73:71–8. [PubMed](#)
<https://doi.org/10.1016/j.jhin.2009.06.012>

4. Wang Y, Hao P, Lu B, Yu H, Huang W, Hou H, et al. Causes of infection after earthquake, China, 2008. *Emerg Infect Dis.* 2010;16:974–5. [PubMed](#) <https://doi.org/10.3201/eid1606.091523>
5. Tao C, Kang M, Chen Z, Xie Y, Fan H, Qin L, et al. Microbiologic study of the pathogens isolated from wound culture among Wenchuan earthquake survivors. *Diagn Microbiol Infect Dis.* 2009;63:268–70. [PubMed](#) <https://doi.org/10.1016/j.diagmicrobio.2008.11.009>
6. Perilli M, Sabatini A, Pontieri E, Celenza G, Segatore B, Bottoni C, et al. OXA-23 carbapenemase in multidrug-resistant *Acinetobacter baumannii* ST2 type: first identification in L'Aquila Hospital (Italy). *Microb Drug Resist.* 2015;21:97–101. [PubMed](#) <https://doi.org/10.1089/mdr.2014.0056>
7. Potron A, Munoz-Price LS, Nordmann P, Cleary T, Poirel L. Genetic features of CTX-M-15-producing *Acinetobacter baumannii* from Haiti. *Antimicrob Agents Chemother.* 2011;55:5946–8. [PubMed](#) <https://doi.org/10.1128/AAC.05124-11>