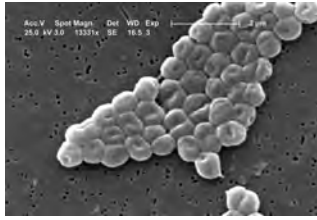


# *Acinetobacter baumannii*

<i>Acinetobacter baumannii</i>	
	
<i>Acinetobacter baumannii</i>	
Scientific classification	
Kingdom:	Bacteria
Phylum:	Proteobacteria
Class:	Gammaproteobacteria
Order:	Pseudomonadales
Family:	Moraxellaceae
Genus:	<i>Acinetobacter</i>
Species:	<i>A. baumannii</i>
Binomial name	
<i>Acinetobacter baumannii</i>	

*Acinetobacter baumannii* is a species of pathogenic bacteria, referred to as an aerobic gram-negative bacterium, which is resistant to most antibiotics.<sup>[1]</sup> As a result of its resistance to drug treatment, some estimates state the disease is killing tens of thousands of U.S. hospital patients each year and specialists say "they could emerge as a bigger threat."<sup>[1]</sup> The illness can cause severe pneumonia and infections of the urinary tract, bloodstream and other parts of the body.

*A. baumannii* forms opportunistic infections.<sup>[2]</sup> There have been many reports of *A. baumannii* infections among American soldiers wounded in Iraq, earning it the nickname "Iraqibacter".<sup>[3]</sup> Multi-drug resistant *Acinetobacter baumannii* is abbreviated as MDRAB. Multidrug-resistant *Acinetobacter* is not a new phenomenon; it has always been inherently resistant to multiple antibiotics.

## Biology

*See also the main article on the Acinetobacter genus*

*Acinetobacter baumannii* is the most relevant human pathogen within the *Acinetobacter* genus. Most *A. baumannii* isolates are multiresistant, containing in their genome small, isolated islands of alien (meaning transmitted genetically from other organisms) DNA and other cytological and genetic material; this has led to more virulence.<sup>[2]</sup> *Acinetobacter* have no flagellum; the name is Greek for "motionless".<sup>[4]</sup>

## Transmission and Prevalence

Acinetobacter enters into the body through open wounds, catheters, and breathing tubes. It usually infects those with compromised immune systems, such as the wounded, the elderly, children or those with immune diseases. Colonization poses no threat to people who aren't already ill, but colonized health care workers and hospital visitors can carry the bacteria into neighboring wards and other medical facilities.<sup>[5]</sup> The number of nosocomial infections (hospital-acquired infections) caused by *A. baumannii* has increased in recent years; as have most other nosocomial pathogens (MRSA, VRSA, VRE, etc.)<sup>[6]</sup>

The first military outbreaks of severe *A. baumannii* infections occurred in April, 2003 in American soldiers returning from Iraq. Early reports attributed the infections to the Iraqi soil. Later testing demonstrated widespread contamination of field hospitals, via transportation of personnel and equipment from previously contaminated European hospitals, as the most plausible vector.<sup>[7]</sup>

## Virulence and Pathogenicity

This opportunistic pathogen causes a wide variety of serious infections in humans, mostly in compromised patients. Recently, *A. baumannii* has emerged as an important pathogen among wounded soldiers, threatening civilian and military patients. *A. baumannii* has also been implicated in severe life threatening infections such as necrotizing fasciitis.<sup>[8]</sup> <sup>[9]</sup>

Nosocomial *A. baumannii* bacteremia may cause severe clinical disease that is associated with an elevated mortality rate.<sup>[10]</sup> This opportunistic pathogen expresses a myriad of factors that could play a role in human pathogenesis. Among these factors are the attachment to and persistence on solid surfaces, the acquisition of essential nutrients such as iron, the adhesion to epithelial cells and their subsequent killing by apoptosis, and the production and/or secretion of enzymes and toxic products that damage host tissues. However, very little is known about the molecular nature of most of these processes and factors and almost nothing has been shown with regard to their role in bacterial virulence and the pathogenesis of serious infectious diseases. Fortunately, some of these gaps can now be filled by testing appropriate isogenic derivatives in relevant animal models that mimic the infections in humans, particularly the outcome of deadly pneumonia. Such an approach should provide new and relevant information on the virulence traits of this normally underestimated bacterial human pathogen.<sup>[2]</sup>

## Control and Treatment of Infections

Multidrug-resistant *A. baumannii* is a common problem in many hospitals in the US and Europe. First line treatment is with a carbapenem antibiotic such as imipenem, but carbapenem resistance is increasingly common. Other treatment options include polymyxins, tigecycline and aminoglycosides.<sup>[11]</sup>

The institution of strict infection-control measures, such as monitored hand washing, can lower hospital infection rates.<sup>[7]</sup>

MDRAB infections are difficult and costly to treat. A study at a public teaching hospital found that the mean total hospital cost of patients who acquired MDRAB was \$98,575 higher than that of control patients who had identical burn severity of illness indices.

There are some specific treatments in developing stage in order to overcome the resistance of this bacterium, using a specific bacteriophage against this type of bacteria.<sup>[12]</sup> <sup>[13]</sup>

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