

# Community-Acquired *Acinetobacter baumannii* Infections in Northern California

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## Abstract

*Acinetobacter baumannii* is an emerging pathogen which causes serious healthcare-associated infections, and less commonly, community-acquired infections, especially in tropical and subtropical climates. A description of the epidemiological and clinical characteristics of patients with *A. baumannii* community-acquired infections, cared for a medical center located in Northern California, is presented. A total of 52 cases were identified, 11 (21%) of which were community-acquired. Community-acquired *A. baumannii* infections caused a variety of serious clinical syndromes; most commonly wound infections, but also urinary tract infections, pneumonia and septic shock. Most cases were associated with comorbidities such as chronic obstructive pulmonary disease, diabetes mellitus and alcoholism. Although multi-drug resistance was seen in 20% of healthcare-associated infections, all of the community-acquired infections were caused by fully susceptible strains.

**Keywords:** *Acinetobacter baumannii*; Community-acquired infections

**Abbreviations:** COPD: Chronic Obstructive Pulmonary Disease; UTI: Urinary tract Infection

## Introduction

*Acinetobacter baumannii* is a gram-negative coccobacillus which has emerged as an important cause of healthcare associated infections, and wound infections in military veterans returning from Iraq and Afghanistan [1,2]. It may colonize tracheostomy sites, open wounds and environmental surfaces which serve as a nidus of spread via contaminated hands of healthcare personnel [3]. Hospital-acquired infections are characterized by high mortality rates and multi-drug resistance. Seasonal variation of *A. baumannii* infection rates has been noted with higher rates in the summer season [4].

Community-acquired *A. baumannii* infections have been recognized mainly in tropical and sub-tropical Asia-Pacific regions, such as Taiwan, Hong Kong and Australia, and rarely in the United States [5]. Most reports describe patients with comorbidities, such as chronic obstructive pulmonary disease (COPD), renal failure and diabetes mellitus, although a few studies describe fulminant *A. baumannii* infections, such as pneumonia and severe sepsis, in otherwise healthy individuals. The mortality rate of community-acquired *A. baumannii* infections may be as high as 56%. Most cases have been caused by strains susceptible to third generation cephalosporins and carbapenems. In order to expand on the epidemiology of community-acquired *A. baumannii* infections in the United States, a detailed report is presented describing clinical characteristics and outcomes of cases seen at a medical center in Northern California.

## Methods

A retrospective study was conducted of patients diagnosed with *A. baumannii* infection in Regional Medical Center of San Jose, CA, a 247-bed trauma medical center serving Santa Clara County, from January, 2009, until July 2011. Patients with *A. baumannii* infection seen in the emergency department wound care clinic or within 48 hours of admission to the hospital, without a history of hospitalization or residence in a long-term care facility in the preceding 30 days, were compared to hospitalized patients with healthcare-associated *A. baumannii* infections during the same period. Patients were deemed to have *A. baumannii* infections if they fulfilled infection criteria

according to the Centers for Disease Control and Prevention/National Healthcare Safety Network of the United States [6].

## Results

A total of 52 cases of *A. baumannii* infections were identified (Table 1). Of these, 11 (21%) were community-acquired, and consisted

| Variable                          | Community-acquired | Hospital-acquired |
|-----------------------------------|--------------------|-------------------|
| Number (%)                        | 10 (20)            | 41 (80)           |
| Median age, years (range)         | 50 (27-91)         | 73 (40-96)        |
| Male sex                          | 8 (73)             | 30 (73)           |
| Clinical syndromes                |                    |                   |
| Pneumonia (%)                     | 2 (20)             | 25 (61)           |
| Wound (%)                         | 4 (40)             | 11 (27)           |
| UTI (%)                           | 3 (30)             | 5 (12)            |
| Primary bacteremia (%)            | 1 (10)             |                   |
| Associated conditions             |                    |                   |
| COPD                              | 3                  | 10                |
| Diabetes mellitus                 | 1                  | 7                 |
| Renal failure                     | 1                  | 8                 |
| Homelessness                      | 2                  | 0                 |
| Alcoholism                        | 3                  | 0                 |
| Neurological                      | 1                  | 15                |
| Polytrauma                        | 0                  | 2                 |
| Urethral stricture                | 1                  | 0                 |
| Cirrhosis                         | 1                  | 0                 |
| Mean length of stay, days (range) | 7 (3-8)            | 32 (4-81)         |
| Deaths (%)                        | 2 (18)             | 4 (10)            |

**Table 1:** Clinical characteristics of *A. baumannii* infections, Regional Medical Center of San Jose, January 2009 to July 2011.

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of 5 wound infections (45%), 3 urinary tract infections (UTI, 27%), 2 pneumonias (18%), one of whom had bacteremia, and one bacteremia with shock (9%). Both cases associated with bacteremia developed septic shock and died. Healthcare-associated infections (41 cases) included a predominance of pneumonia (59%), and less commonly, wound infections (27%), UTI (12%) and bacteremia without death (2%). Community-acquired infections occurred in younger patients (average age 54 years compared to 70 years). All community-acquired cases were caused by fully susceptible *A.baumannii* strains, whereas 20% of hospital-acquired infections were associated with multi-drug resistance to penicillins, cephalosporins and carbapenems. Most cases (>75%) from both groups occurred during the months of December to May.

### Comment

Community-acquired *A. baumannii* infections taken care of at a community-based medical center in Northern California, caused a variety of serious clinical syndromes, most commonly wound infections, but also UTI, pneumonia and septic shock (Table 1). In contrast, most healthcare-acquired cases were associated with pneumonia. Community-associated infections occurred in younger patients, and were lethal in both cases associated with bacteremia. Most patients in both groups had associated comorbidities such as COPD, diabetes mellitus and alcoholism. Unlike previously reported predominance

in warmer months, most cases of both hospital and community-acquired *A.baumannii* infections were seen in late fall or winter months. Although multi-drug resistance was seen in 20% of healthcare-associated *A. baumannii* infections, all community-acquired infections were caused by fully susceptible strains. Local epidemiologic data, such as that found in this report, may be useful for the development of empiric treatment recommendations for *A. baumannii* infections by hospital-based antibiotic stewardship programs.

### References

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