CHAPTER-7

CONCLUSION

The high antimicrobial resistance of Acinetobacter spp poses a great threat to hospitalized patients. A strict surveillance programme to detect and control the environment pollution and antimicrobial stewardship are the two important measures most likely to control the spread of this organism in hospitals. Regular monitoring of the antibiogram of hospital pathogen is also recommended to keep physician updated on the proper empirical treatment of such rapidly evolving resistant pathogens.

Resistance among the hospital isolates detected by Kirby Bauer disk diffusion method should be rechecked with MIC to detect high level resistance. In this study, strains were mostly resistant to carbapenem group of drugs. Rational use of antibiotics should be mandatory in the hospital setting to prevent the spread of resistance in Acinetobacter. The detection of MBL and other Carbapenemases are important in deciding the most appropriate therapeutic regimen for treatment of Carbapenem resistant non fermentors.

This study successfully demonstrates the utility of the multiplex PCR assay as a useful technique in the detection of OXA-23, OXA-58 and NDM-1 harbouring bacterial pathogens. Moreover studying the epidemiology of such resistant strains help to limit the spread of such strains in hospital settings as well as in the community, and also help in initiating specific hospital infection control measures.
The wide array of intrinsic and acquired resistance determinants that have emerged in Acinetobacter have justifiably brought it great scientific attention. As determined by the Infectious Diseases Society of America, *A. baumannii* is one of the “red alert” pathogens that greatly threaten the utility of our current antibacterial armamentarium. Prior to the 1970s, it was possible to treat Acinetobacter infections with a range of antibiotics, including aminoglycosides, β-lactams, and tetracyclines. However, resistance to all known antibiotics has now emerged in *A. baumannii*, thus leaving the majority of today’s clinicians in unfamiliar territory. Compounding the problem is the large number of pharmaceutical companies that have abandoned antibiotic drug discovery and development, driven primarily by the risks of poor financial returns relative to those for more lucrative classes of drugs. The dearth of antibiotics, especially for Gram negative organisms, has recently stimulated attention from major research and governing bodies. Unfortunately, at this stage, very little is in the therapeutic pipeline and the new agents with activity against Gram negative organisms are all modifications of existing classes. Novel antibiotic targets and mechanisms of action are urgently required.

Significant advances have been made in our understanding of *A. baumannii* over recent years, but many unanswered questions still remain. Its wide array of drug resistance determinants and its ability to effectively regulate these according to selective environmental pressures clearly demand respect. The global epidemiology of *A. baumannii* is concerning for widespread dissemination, most often in a clonal manner within institutions or cities, and sometimes between countries. The evidence suggests that hospital acquired *A. baumannii* infections prolong the lengths of hospital stays and subsequent health care costs. However, the direct effects of *A. baumannii* on mortality appear less well defined. Despite the majority of *A. baumannii* strains still being susceptible to carbapenems, many institutions around the world are faced with the challenging issue of pandrug resistance. New therapeutics are clearly needed, and we as clinicians, microbiologists, and scientists must think broadly about our approach to antimicrobial drug development, as novel targets will no doubt provide the most reward for our afflicted patients.
New Delhi metallo β lactamase (NDM-1) is a nomenclature that Indians cannot be proud of, NDM-1 is the designation for carbapenemases found in Enterobacteriaceae isolated from patients in United Kingdom and elsewhere who have had health care contact in India and Pakistan. Treatment of infections caused by pathogens producing carbapenemases, including NDM-1, poses a serious challenge as these infections are resistant to all commonly used antibiotics. Treatment of patients should be guided by the susceptibilities of the individual pathogens, and clinical laboratories must test for a wide range of antibiotics, including tigecycline, colistin, polymyxin and aztreonam. The use of antibiotic combinations may have to be considered in critical cases. Microbiologists have a very important role in the prevention of spread of these dreaded multi resistant pathogens across the world. They should actively participate in the clinical decision making with regard to the treatment of infections, influence the policies and approach to infections and antimicrobials by the government, develop guidelines for antibiotic therapy in their local hospitals, become infection control doctors, set up surveillance systems for drug resistant organisms, and educate health care workers and the general public about the dangers of multidrug resistant organisms, including hospital acquired infections.
PART II
EVALUATION OF VIRULENCE FACTOR IN ACINETOBACTER