ANTIMICROBIAL USAGE AND OUTCOMES FOLLOWING LABORATORY SUPPRESSION OF ANTIMICROBIAL SUSCEPTIBILITY RESULTS FOR PSEUDOMONAS AERUGINOSA IN SPUTUM CULTURE

Kwee C. Liew, MBBS[1], Oliver Evans, MBBS[1], Erica Wales, MD[2], Stuart Bond, PhD[2,3], Peter Newton, MBBS, FRCPA[4] and Spiros Miyakis, MD,PhD, FRACP[1,3,5]

[1]Department of Infectious Diseases, [2]Department of Pharmacy, [3]School of Medicine, University of Wollongong,
[4]NSW Health Pathology Microbiology, Wollongong Hospital,[5]Illawara Health and Medical Research Institute, Wollongong, New South Wales, Australia

Introduction

P. aeruginosa isolates from expectorated sputum cultures do not always require treatment, often representing upper respiratory tract colonisation. By releasing sputum *P. aeruginosa* antimicrobial susceptibility results, only upon specific phone request by treating clinicians, we aimed to reduce use of ciprofloxacin without compromising clinical outcomes.

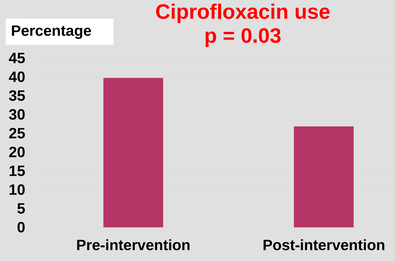
Methods

From 26 February 2015, antimicrobial susceptibility results for *P. aeruginosa* in sputum were routinely suppressed except for immunosuppressed, Intensive Care Unit, cystic fibrosis or bronchiectasis patients. A database search of the Wollongong Hospital Microbiology laboratory information system identified 108 patients with susceptibility results suppressed (26 Feb 2015 - 25 Feb 2017), compared with 108 patients where antimicrobial susceptibility results were routinely reported (26 Feb 2013 - 25 Feb 2015).

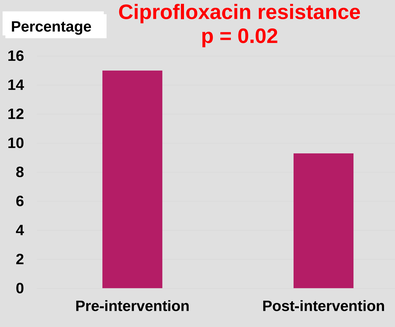
Data collected included age, sex, residency, admission date and diagnosis, comorbidities, allergy, empirical and definitive antibiotic treatment, date of sputum culture, resistance patterns of *P. aeruginosa*, ciprofloxacin usage, Antimicrobial Stewardship (AMS) interventions, length of stay, inpatient mortality and readmission within 30 days.

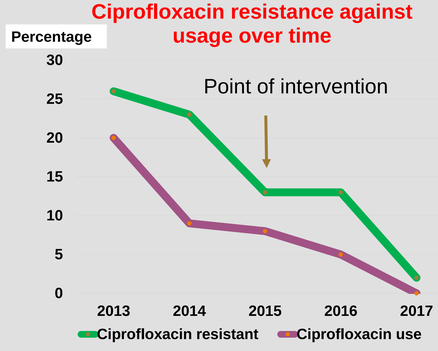
Results

The prevalence of *P. aeruginosa* in sputum cultures was 11% (1252/11388). Patient characteristics were comparable in the two groups. Ciprofloxacin use was significantly reduced post-intervention [26.9% (29/108) versus 39.8% (43/108); p= 0.04] as well as AMS approvals [9.03% (87/963) versus 17.72% (188/1061); p<0.01]. Interrupted time series analysis showed that the association between the suppression of *P. aeruginosa* susceptibility results and reduction in ciprofloxacin use was non-statistically significant.



The rate of ciprofloxacin resistance in sputum *P. aeruginosa* isolates was lower post-intervention [9.3% (32/343) versus 15% (60/399); p= 0.02].





There was no significant difference in length of stay, 30-day readmission rates and mortality.

	Pre-intervention (n=108)	Post-intervention (n= 108)	p-value
Length of stay (LOS)	14.8 days	14.1 days	0.72
30-days readmission	31 (28.7%)	27 (25%)	0.54
Inpatient mortality	6 (5.6%)	7 (6.5%)	0.77

Conclusions

This study offers a successful model of collaboration between the microbiology laboratory and antimicrobial stewardship activity. It showed a reduction in use of ciprofloxacin with possible influence on *P. aeruginosa* resistance rates, without affecting patient outcomes.

Acknowledgement

Jose Cuenca (JC), PhD, MSc, BSc Research Central, Illawarra Shoalhaven Local Health District, New South Wales for statistical support.
Ryan Pratama (RP), Research Assistant, NSW Health Pathology, Prince of Wales Hospital, Randwick, New South Wales for statistical support.
NSW Health Pathology, Microbiology Department, Wollongong Hospital.

Contact

Dr Kwee C. Liew
Email:
KweeChin.Liew@health.nsw.gov.au
Declaration of interest: None