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Abstract (oral session)

Outbreak report of multidrug-resistant *Pseudomonas aeruginosa* [MDR-PA] in a cardiac intensive care unit at a Lancashire cardiac centre

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Background: *Pseudomonas aeruginosa* [PA] is a major opportunistic nosocomial pathogen. PA often colonises hospital and domestic water taps, sinks, drains, toilets and showers. We present an outbreak report, of 13 cases of MDR-PA infections (between Aug-Dec2010) in a cardiac intensive care, including outbreak investigations, management, saving a major expense and an interesting observation/hypothesis of downregulation of resistance mechanism in environmental outbreak strain. Methods: PA isolates from 13-patients in CITU and environment/equipment were confirmed by VNTR molecular typing at Colindale. Over 200samples obtained from environment[tap water from sinks in CITU, theatre, water tanks, cleaner buckets and cloths, etc] and equipment. Case defined-MDR-PA isolated from symptomatic patient in CITU. Definition outbreak was unusual increase in cases with outbreak strain MDR-PA. Results: MDR-PA infections included chest, wound, bone and drain site infections. No bacteraemia recorded. Outbreak strain in 10 [of 13 patients] and most CITU sink tap water. Dissection/sampling of 2-sinks down to hot/cold water pipes revealed colonised spray unit of tap nozzle[picture] and sink trap. Interestingly, the environmental outbreak strain was uniformly sensitive PA while all patient isolates MDR-PA. Interventions: Regular outbreak committee meetings including press statement, action plan, team working [estates, cardiac division, Cleaners, Microbiologist and infection control]. Actions included - enhanced education/training, covert audit of compliance to IC protocols[handhygiene, ANTT & patient material discarding practices]; Cleaners - separate disposable cloths; new protocol/high chlorine cleansers;audit of practice; Estates-change flexible hose to copper pipes, remove/clean/hyperchlorinate tap nozzle spray units and post intervention regular water testing; Close monitoring of situation. Conclusions: Regular outbreak meetings; teamwork between microbiologist-estates-cleaners-cardiac division; planned/scientific/logical comprehensive approach contained the outbreak; A reflex expense of approx 80K in changing all sinks was prevented; The thermostatic mixer valve/flexible hose were negative for PA. Sensor tap mixer has been incriminated in other PA outbreak reports. Our hypothesis for the fully sensitive PA outbreak strain in environment is down regulation of resistance mechanism due to lack of antibiotic pressure. Pictures and stepwise outbreak management details to be presented.

