Project proposal

Project title	Antibiotic Resistance within Clinically Important Hospital Infections
First Supervisor	Dr ▾ Simon Gould
Second Supervisor	Dr James Denholm-Price
School	Life Sciences ▾
Other member of supervisory team (no more than three KU supervisors in total)	Prof Mark Fielder, Dr Gordon Hunter providing expertise in machine learning techniques and
Specific requirements beyond 2:1 degree	

Project summary
(max 4,000 characters)

MSc by Research

Antibiotic resistance is a continuing clinical concern in the UK and worldwide. Data are routinely collected in the UK to monitor antibiotic resistance in a number of bacteria, including Streptococcus pneumoniae, Staphylococcus aureus, Enterococci, Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa. This is currently used to produce "snap shots" or retrospective views on resistance within bacterial infections [1,2].

This MSc by Research project is effectively phase 1 of a larger project that uses data from a number of UK hospitals gathering retrospective epidemiological information on antibiotic resistance. The data will be used to identify patterns and trends that could be used to build statistical predictive models to aid hospitals in selecting and updating antibiotic prescription policies [3].

Availability of information will vary by hospital, by ward and microorganism so techniques for dealing with missing data will be adopted in the analysis. Parameters will include ward, sample type, antibiotic sensitive profile and antibiotic prescription policy used in the hospitals. Standard statistical analysis techniques are applicable to the majority of these data and will be used to investigate the information provided by various parameters in relation to the development of antibiotic resistance.

References

[1] "Getting Ahead of the Curve: A strategy for combating infectious disease (including other aspects of health protection)" Department of Health 2002.

[2] S.W.J. Gould, J. Rollason, A.C. Hilton, P. Cuschieri, L. McAuliffe, S.L. Easmon, and M.D. Fielder, "UK epidemic strains of meticillin-resistant Staphylococcus aureus in clinical samples from Malta", J. Med. Microbiol. 2008.

[3] K.F. Woeltje & E. Lautenbach "Informatics and Epidemiology in Infection Control, Infectious Disease Clinics of North America", Infection Prevention and Control in the Hospital 2011.