

## **Appendix 1: AmEAG quotes providing examples of use of science in practice**

<b>Social and behavioural sciences</b>
<i>“Behavioural change is a key part of all antimicrobial stewardship work. We have been doing lots of work on penicillin allergy de-labelling, using behaviour change theories to develop our approaches.”</i>
<i>“Explaining why we want people to optimise antibiotics, to motivate them to change as per the (Capability, opportunity, and motivation behaviour) COM-B model”</i>
<i>“I’ve been training with health psychologists to roll out training to other pharmacists in behaviour change and quality improvement... Also, I apply behaviour science to individual cases; for example, with a person who injects drugs and needs long term antimicrobial therapy for infected leg ulcers, I would consider social circumstances and the impact of this on treatment compliance to ensure optimal outcomes for this patient. This would take into account drug choice and frequency of dosing.”</i>
<b>Physiology and Pharmacology (incl. pharmacokinetics, pharmacodynamics, pharmacognosy, pharmacotherapeutics, and toxicology)</b>
<i>“In our daily work we are constantly thinking about physiology; for example, how the patient presents and how the medications can be delivered to target site.”</i>
<i>“Pharmacokinetics/Pharmacodynamics are used for each patient’s review, and this includes adults, paedts and neonates. Toxicology is often considered as well. Interactions are all considered. We use these skills every day.”</i>
<i>“Teaching medical students which bodily sites are sterile and which are colonised, to assist in interpreting microbiology sample results”</i>
<i>“Using pharmacokinetic models to adjust antibiotic doses in response to therapeutic drug monitoring levels”</i>
<i>“When working clinically each day I am practicing pharmacology and physiology. For example, considering the impact of renal and hepatic impairment, calculating doses in paediatric patients, and considering the impact of obesity/ underweight patients on the dosing of antimicrobials.”</i>
<i>“From the patient who is admitted with a life threatening infection, to a simple skin infection – my knowledge is tested every day in adults and paediatrics as I try to optimise antimicrobial therapy. Have we optimised therapeutics? Can they swallow? Are they absorbing? How do we monitor the patient? Can we get the patient home, if that is what is best for them? I use my specialist scientific and clinical training every day working with a team.”</i>
<b>Chemistry</b>
<i>“We have to consider pH and stability of medicines when developing treatment plans”</i>
<i>Discussing differences in penicillin cross-sensitivity based on side chains”</i>
<b>Pharmacogenomics</b>

*“Not as much as we will in the future, but we are working in response to the MHRA drug safety update regarding aminoglycosides and mitochondrial mutations alongside Consultant pharmacist for genomics. It is an exciting area and one we are keen to work on and expand.”*

*“Teaching about the predisposition of individuals with specific genetic mutations to aminoglycoside ototoxicity”*

***Population Health/Public Health sciences (incl. epidemiology)***

*“Reviewing local Gram-negative bacteraemia trends and identifying potential drivers for modification”*

*“Involvement in measles cases and diphtheria case which needed liaison with different departments. Consideration to vaccines and upcoming flu season.”*