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Mapping decision pathways for acute infection management in UK secondary care: a qualitative study

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Background: The importance of behaviour change interventions in improving the use of antimicrobials in infection management has been recognised. Despite the growing body of evidence describing knowledge, attitudes, and cultural determinants of antimicrobial prescribing, little data exists mapping clinicians' decision pathways in this field. We conducted a study to map physician decision making processes for acute infection management in secondary care to identify potential targets for quality improvement interventions.
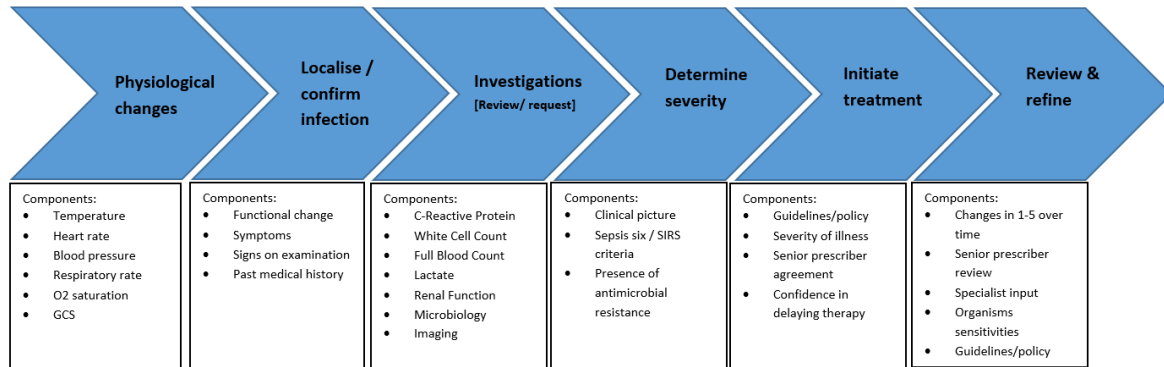
Material/methods: Newly qualified though to Consultant level physicians from 10 non-infection medical specialties participated in semi-structured interviews of up to 32 minutes duration. Interviews were audio recorded, transcribed verbatim, and analysed using NVIVO11.0® using grounded theory methodology. Analytical categories were created using a constant comparison approach and participants were recruited to the study until thematic saturation was reached (twenty physicians were ultimately interviewed).

Results: The decision pathway for the management of acute infections follows a Bayesian-like step-wise approach, with information processed and systematically added to prior assumptions, across six common themes (**figure 1**), guiding subsequent management. Fever, C-reactive protein, and local microbiologist guidance and advice are regarded as key factors within this pathway

Several themes were also reported that influence different steps in the decision making pathway of physicians. These were; (i) a desire to provide optimal care for the patient with infection by providing rapid and often intravenous therapy, regardless of whether this was in accordance with evidence; (ii) perceptions that stopping/de-escalating therapy was a senior doctor decision with junior trainees not expected to contribute to this process; and (iii) expectation of interactions with local guidelines and microbiology service advice. Senior feedback on review of junior doctor prescribing decisions was often lacking, causing frustration and confusion on appropriate practice within this cohort. Additionally, previously published factors including the role of team hierarchies and prescribing etiquette was found to heavily influence decision making for infection management amongst the study participants.

Conclusions: Interventions to improve infection management must incorporate mechanisms to promote distribution of responsibility for decisions made. The disparity between expectations upon prescribers to start but not review/stop therapy requires addressing urgently with mechanisms to improve communication and feedback to junior prescribers to facilitate their continued development as prudent antimicrobial prescribers.

Figure 1. Reported individual decision pathway of infection managenet for medical physicians within secondary care

Physiological changes	Localise / confirm infection	Investigations [Review/ request]	Determine severity	Initiate treatment	Review & refine
Components: • Temperature • Heart rate • Blood pressure • Respiratory rate • O2 saturation • GCS	Components: • Functional change • Symptoms • Signs on examination • Past medical history	Components: • C-Reactive Protein • White Cell Count • Full Blood Count • Lactate • Renal Function • Microbiology • Imaging	Components: • Clinical picture • Sepsis six / SIRS criteria • Presence of antimicrobial resistance	Components: • Guidelines/policy • Severity of illness • Senior prescriber agreement • Confidence in delaying therapy	Components: • Changes in 1-5 over time • Senior prescriber review • Specialist input • Organisms sensitivities • Guidelines/policy

Legend: Simplified, linear schematic representing the individual physicians reported decision pathway for infection management. At any point in the pathway the physician may return to previous steps of the pathway to add prior knowledge to new information as it arises to help justify the probability that their current working diagnosis / plan is correct.

GCS = Glasgow coma scale