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

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Introduction

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.

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).

Table 1. Participant specialties

Grade	Specialty
Consultant	Acute Medicine
Consultant	Acute Medicine / Endocrinology
Consultant	Haematology
Consultant	Haematology
Consultant	Haematology
Consultant	Care of the Elderly
Consultant	Gastroenterology / Acute Medicine
Consultant	Respiratory Medicine
Consultant	Respiratory Medicine
Specialist Registrar	Care of the Elderly
Specialist Registrar	Care of the Elderly
Specialist Registrar	Cardiology
Specialist Registrar	Clinical Pharmacology & Therapeutics / General Medicine
Core Trainee Year 2	On rotation - Acute Medicine
Core Trainee Year 1	On rotation - Acute Medicine / Stroke Medicine
Foundation Year 2	On rotation - Gastroenterology
Foundation Year 2	On rotation - Respiratory Medicine / General Medicine
Foundation Year 2	On rotation - Acute Medicine
Foundation Year 1	On rotation - Renal Medicine
Foundation Year 1	On rotation - Acute Medicine

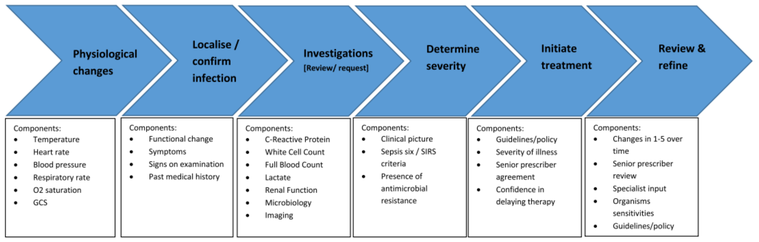

Figure 1. Reported individual decision pathway of infection management

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.

Table 2. Selected quotes surrounding expectations of antimicrobial use

No.	Quote	
Expectations of antimicrobial use		
1	*"I think I know when would be an easy enough time as a junior doctor to go, yeah, I think this warrants Tazocin, this warrants cefuroxime IV. So for some drugs I think you have a little bit more of an ease of prescribing because you're not too worried about the downsides"*	On-rotation, acute medicine 1
2	*"So nights, I think obviously it becomes much more of a zoo doesn't it really, so people tend to start broad spectrum agents without really looking through previous microbes and patients have a tendency to stay on that till it's reviewed in daytime hours"*	On-rotation, acute medicine 2
3	*"If the patient is septic or something, you have to start antibiotics within your hour, Sepsis Six, but then you're also under pressure to get the right source"*	On-rotation, acute medicine 2
4	*"Yeah, definitely in terms of how you go but I think anyone who's done hospital medicine now sees that Tazocin is basically the port of call for most things"*	On-rotation, cardiology
5	*"When I look back at years gone past, I think I was probably quite gung-ho with antibiotics because it was the easy option because you didn't want to get in trouble and I'm sure plenty of patients in [region - UK] got BenPen [benzylpenicillin] and Cipro [ciprofloxacin] when they might have lived without it. But this is a situation in which, I think, the way I've changed is that I tend to look at what the risks of deferring here versus not"*	Specialist registrar, cardiology
6	*"I've got a bit of a nice cushion from all the senior levels about even if I prescribe the wrong antibiotic, I don't mean of course prescribing penicillin when someone's penicillin allergic, that's not what I mean. I mean prescribing for example fluclaxacillin when it's an E. coli bacteria, wrong bacteria, wrong antibiotic of choice or bacteria, but an antibiotic nonetheless"*	On-rotation, acute medicine 3
7	*"I think a lot of people, myself included, would say if you are admitting the patient to hospital and they have an infection severe enough to come into hospital then you should, and I know this is not what microbiologists would say, but in my mind you like to feel like you are doing something that they couldn't have at home and that's why you give them some intravenous antibiotics when they come into hospital with a view to stepping them down very quickly afterwards, and I think it makes everyone feel better whether it's the patient and more significantly the doctor"*	Consultant, general internal medicine
8	*"I would not expect an SHO [senior house officer] to decline to give antibiotics"*	Specialist registrar, geriatrics

Table 3. Selected quotes surrounding expectations of stopping / deescalating therapy

	Expectations around stopping/de-escalating therapy	
1	*"We are responsible for everything on the ward as well as all the decisions and I think we've got these practices in place which make sure that the antibiotics are stopped at a particular time when they needed to be stopped"*	Consultant, haematology
2	*"I'm complete disempowered [to stop antibiotics], completely because they're so complicated and the consultants who know their patients have their own ways of prescribing. It's very unusual that anyone would actually explain to you what they're thinking. I think I've had one explanation which was like a ray of sunshine"*	On-rotation, renal
3	*"In terms of stopping antibiotics yeah, I think stopping antibiotics is a very nebulous thing in itself… it is pretty random and is not really a huge amount of evidence out there… I feel very happy with making decisions as to whether to stop after three times, seven, ten days whatever. I don't think that's a big issue"*	Consultant, general medicine
4	*"So I feel quite, I wouldn't say disempowered, but I feel like the seniors make most of the decisions. So I'm quite reluctant to make any decisions about [de-escalating] antibiotics"*	On-rotation, gastroenterology
5	*"Stopping them is generally, from my experience, has been a senior's [decision]"*	On-rotation, acute medicine 1
6	*"De-escalating can be a little bit more tricky, it's very much individually based. [For] some people it's easier but if there's no plan in place, if someone hasn't said for five days, go for IVs and then deescalate to PO I would be hesitant. I would tend to want to get a little bit of reassurance"*	On-rotation, acute medicine 2

Discussion

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.

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