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Cultures of resistance? A Bourdieusian analysis of doctors' antibiotic prescribing

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**Title:** Cultures of resistance? A Bourdieusian analysis of doctors' antibiotic prescribing

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**Keywords:** Australia; qualitative interviews; antibiotics; prescribing; infection control; hospital medicine.

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**Research Highlights**

- Qualitative study of 30 hospital-based doctors' experiences of using antibiotics
- Examines the dilemma of the immediate versus long-term risks of prescribing
- Theorises antibiotic use utilising Bourdieu's notions of *field*, *habitus* and *capital*
- Argues that resistance is a principle of limited significance in the hospital

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**Abstract:**

The prospect of an 'antimicrobial perfect storm' in the coming decades through the emergence and proliferation of multi-resistant organisms has become an urgent public health concern. With limited drug discovery solutions foreseeable in the immediate future, and with evidence that resistance can be ameliorated by optimisation of prescribing, focus currently centres on antibiotic use. In hospitals, this is manifest in the development of stewardship programs that aim to alter doctors' prescribing behaviour. Yet, in many clinical contexts, doctors' antibiotic prescribing continues to elude best practice. In this paper, drawing on qualitative interviews with 30 Australian hospital-based doctors in mid-2013, we draw on Bourdieu's theory of practice to illustrate that 'sub-optimal' antibiotic prescribing is a logical choice within the *habitus* of the social world of the hospital. That is, the rules of the game within the *field* are heavily weighted in favour of the management of immediate clinical risks, reputation and concordance with peer practice vis-à-vis longer-term population consequences. Antimicrobial resistance is thus a principal of limited significance in the hospital. We conclude that understanding the *habitus* of the hospital and the logics underpinning practice is a critical step toward developing governance practices that can respond to clinically 'sub-optimal' antibiotic use.

**Keywords:** Australia; qualitative interviews; antibiotics; prescribing; infection control; hospital medicine.

**Introduction:**

Antibiotic resistance has been heralded as one of the key challenges for medicine in the 21<sup>st</sup> Century (Kumarasamy et al., 2010). The emergence of resistant superbugs has created the prospect of an ‘antimicrobial perfect storm’ in the next few decades (Gould, 2002). Major resistant organisms are increasingly prominent (Gould, 2002; Theuretzbacher, 2012), and antibiotic use remains poorly controlled (Bantar et al., 2003; Cairns et al., 2013). Hospitals retain control of the few antibiotics effective against multi-resistant organisms and thus are important sites for optimising prescribing (Cairns et al., 2013). Control strategies implemented within hospitals, including antimicrobial stewardship programs, have largely failed to significantly influence hospital-based doctors’ prescribing behavior (Björnsdóttir & Hansen, 2002; Cairns et al., 2013; Davey et al., 2009; Hulscher et al., 2010).

On any given day in Australia, approximately 40% of hospital in-patients will receive antibiotics (Ingram et al., 2012) with up to 50% of those deemed sub-optimal in current best practice terms (Gottlieb & Nimmo, 2011; Ingram et al., 2012). Clinically optimal prescribing in this context relates to appropriate choice of antibiotic, route of administration (IV or oral) and duration. Sub-optimal antibiotic prescribing is not restricted to Australia, and has been illustrated within hospital settings internationally (Cairns et al., 2013). It has also been identified as a contributing factor in failure to control the development of antimicrobial resistance (Bantar et al., 2003; Davey et al., 2009). A key issue has been doctors’ preparedness to engage with issues around the relationship between their practices and antimicrobial resistance (Pulcini et al., 2011). Despite major concerns for the future potency and availability of antibiotics, changing how doctors prescribe has been challenging if not ineffectual in many clinical contexts (Charani et al., 2013; Davey et al., 2009).

The limited social science research available indicates that the social relations of medicine are influential in shaping antibiotic prescribing (e.g. Lewis & Tully, 2009). This includes the relationships between doctors in the form of norms and hierarchies (Britten, 2001; Charani et al., 2013; Lewis & Tully, 2009; Hulscher et al., 2010) as well as relations with patients and their families (Stivers, 2005). Analysis thus far has largely focused on primary care settings (e.g. Britten et al., 2000; Butler et al., 2001; Henriksen & Hansen, 2004; Kumar et al., 2003; Rollnick et al., 2001) with very limited understanding of practices within hospitals. Here we focus on doctors' antibiotic decisions within a hospital and the social relations that generate and perpetuate norms of practice.

**Background:**

The modern antibiotic era began with the discovery of penicillin by Alexander Fleming in London in 1928, which led to dramatic improvements in the ability to treat common infections. Widespread use of penicillin and other antibiotics that were subsequently developed led to the emergence of bacteria resistant to almost all currently available antibiotics (Boucher et al., 2013; Kumarasamy et al., 2010). The antibiotic pipeline of drug development is now extremely limited (Boucher et al., 2013), with only five new chemical classes of antibiotics developed since 1970. Given limited success in antimicrobial development, efforts have focused on preserving the activity of the current antimicrobials (Cairns et al., 2013). Thus far, programs have had limited effects (Cairns et al., 2013), have been differentially implemented across clinical settings, and have lacked responsiveness to the socio-cultural factors that shape behaviour (Charani et al., 2013; Hulscher et al., 2010).

*Antibiotic use in global context*

The challenges of managing antibiotic use and increased resistance are not restricted to Australia, posing problems globally. The European Union's (EU) European Surveillance of Antimicrobial Consumption Network records data from the EU, illustrating that while 29% of in-patients receive antibiotics, only 50% are concordant with clinical guidelines (Zarb et al. 2011). The Centers for Disease Control and Prevention has invested significantly in monitoring in-patient antimicrobial use in US hospitals, including recent initiatives seeking to promote systematic reporting of antimicrobial use and roll-out national point prevalence surveys of hospitalised patients (Fridkin, 2013). Such initiatives emerge from concerning US data illustrating high levels of inter and intra-institutional variability in antibiotic use within US hospitals (e.g. Gerber et al. 2013).

The situation in developing countries is even more problematic, with the unenviable dual challenges of unregulated access to antibiotics and a high burden of infectious diseases (Nguyen et al. 2013). This has led to high rates of multi-resistant organisms, which in turn stimulates the over-prescription of broad spectrum antimicrobials. In India, the Chennai declaration of 2012 outlined a commitment across medical sectors to the implementation of a plan to control use of antibiotics in India. The extent to which practice change has been enacted even in major metropolitan areas is unclear (see Kumarasamy et al. 2010). A recent study shed light on the South American situation examining prescribing in Latin American Intensive Care Units, finding widespread use of the broadest spectrum antimicrobial group, carbapenem, despite lack of clinical need (Curcio, 2011). Recent work in Brazil has showed improvements resulting from enhanced infectious diseases input in Brazilian hospitals in but also ongoing inappropriate use and overuse (Kawanami et al. 2011).

Globally, antibiotic use in hospitals remains poorly regulated and resistant organisms are proliferating. There are important social and professional factors which limit the capacity of health services and providers to regulate and shape prescribing practices

*Antibiotic prescribing as a social problem*

As illustrated by social scientists previously, antibiotic use can be inflected by patient *expectations* for care (Lewis & Tully, 2009; Stivers, 2005; Stivers et al., 2003). In non-hospital settings, antibiotic use has been shown to be deeply embedded in doctor-patient talk within medical consultations, including being shaped by the use of power/capital and performances of medical expertise. For example, in their study Heritage and Stiver's (1999) illustrate how online commentary (i.e. 'talk' during medical examinations) is used in primary care to prepare patients for 'no problem' diagnoses and to minimise the potential for the need to prescribe antibiotics. That is, antibiotic decisions should be viewed as relational and negotiated, and tied to patient expectations as well as the lay-expert dynamics that influence these.

Another key social dynamic of relevance here is that of antibiotic decisions as articulating professional cultures and hierarchies within *and* between medical specialties. There has been some (albeit limited) social science work illustrating the continued localisation of prescribing practices despite attempts to systematise medical work. Examples include the role of etiquette, fraternalism and relational pressure in inflecting antibiotic prescribing practice (Björnsdóttir & Hansen, 2002; Charani et al., 2013; Lewis & Tully, 2009; see also Britten, 2001). Charani et al. (2013) recently identified *etiquette* as inflecting decisions about antibiotic use within NHS hospitals, indicating that professional cultures strongly influence doctors' behaviour. While promising, existing work, focused largely on primary care (e.g.



Butler et al., 2001; Henriksen & Hansen, 2004; Wood et al., 2013), and requires extension to capture questions of power, the role and production of social capital, and deeper aspects of medical identity work. There is a need for a critical examination of shifting risk profiles in the context of a surge in concern around antimicrobial resistance. To achieve this we utilise Bourdieu's theory of practice.

#### *A theory of (prescribing) practice*

Bourdieu's theoretical ideas have been applied to a wide a range of health-related contexts (e.g. Ahmed & Jones, 2008; Brown et al., 2008). Here we utilise Bourdieu's theory of practice (1990; 1998) for conceptualising the structure-agency dialectic as evident in a group of Australian doctors' accounts of antibiotic prescribing. Specifically, the interrelated concepts of *field*, *habitus* and *capital*, to make sense of the disjunction between the increasing threat of resistance and clinically sub-optimal practices.

For Bourdieu, a society contains many *fields* (Bourdieu, 1990); examples include medicine, healthcare, education and the state. Within each field, institutions, structures and activities are underpinned by a discernible set of logics and dynamics (Bourdieu, 1998; Bourdieu & Wacquant, 1992). In the context of antibiotic prescribing, the field includes such things as: hospital-specific, state-wide and national policies, procedural directives and education around optimising prescribing practices; the knowledge and expertise of a range of social actors; and, the organisational structures and hierarchies in place within the hospital. Bourdieu analogises that each field contains a distinct type of social game (1990). For each doctor (or 'player' in Bourdieu's terms) working in the hospital, their *habitus* is the production and reproduction of processes of socialisation within various spaces of power; their 'feel for the game' (Bourdieu, 1990; Samuelsen & Steffen, 2004). Habitus - concurrently shaping and shaped by everyday

practices - is a set of dispositions which a social actor acquires through processes of socialisation, providing a mechanism for highlighting the generative principles of action or practice (Bourdieu, 1990; Bourdieu & Wacquant, 1992). Habitus is both an individual embodied reality and an organising principle, describing the ways by which the external (social) is internalised resulting in collective patterns of thinking and doing, without necessarily rational or conscious reasoning (Bourdieu & Wacquant, 1992). Within a field, the rules of the game tend to be experienced as taken-for-granted, with the historical struggles by which such norms were established forgotten (Bourdieu, 1990; Bourdieu & Wacquant, 1992). Bourdieu refers to this as *doxa* or 'what goes without saying'. For each social actor, the 'feel for the game' invokes and requires distinct skills and resources, where 'playing by the rules' affords beneficial outcomes (Bourdieu & Wacquant, 1992). As we will illustrate here, this is shown in these doctors' therapeutic choices.

Habitus is inflected by forms of *capital* (Bourdieu, 1990) with social capital providing most pertinence here. Capital refers to the range of resources acquired and displayed by a social actor, through, for example, networks, recognition, information, style and educational credentials (Bourdieu & Wacquant, 1992). Within the game, players harbor varying levels of capital, as social actors cannot all access and utilise resources to the equal extents (Bourdieu, 1990). The concept of capital thus elicits notions of relative advantage and power. Social capital, as associated with status, professional relationships, experience and reputation within the hospital, can be viewed as multifaceted and multileveled, with varying extents of social capital also accrued and displayed according to personality, biography, and knowledge and understanding of antibiotic prescribing.

Here we utilise Bourdieu's notions of field, habitus and capital to help make sense of medical cultures of prescribing, situating doctors' practices and social positions within the structures of power and resources of the hospital. Such an analysis enables, following Brown et al. (2008:1049), an account of the moral and strategic stances ('prise de position') that actors may assume, which permit certain forms of improvisation while inhibiting or disallowing others. By utilising Bourdieu's theory of practice, we are able to situate antibiotic prescribing as within a person's habitus, the 'sense of one's place' (Bourdieu, 1984), and as largely unconscious and habitual practice governed by forms of social interaction and social capital.

### **Methods:**

We employed a qualitative inductive approach, using semi-structured interviews in order to investigate the experiences of doctors who prescribe antibiotics at a hospital in Queensland, Australia. Once ethics approval was granted (#2013000029) the study was advertised throughout the hospital, with each department head asked to forward a participation information statement to doctors within their department. To ensure maximum variation, from the 50 doctors who responded, we selected 35 to provide representation across specialty, seniority and gender. Of the 35 who initially offered to participate, five later withdrew due to scheduling constraints, with a total of 30 interviewed interviews in May 2013. The interviews each lasted between 30-60 minutes and were recorded and fully transcribed. The interviews continued until data saturation was reached. Participants were interviewed from the following departments: emergency medicine (3), general medicine (4), geriatrics (3), intensive care (2), obstetrics and gynecology (3), oncology (2), orthopedics (2), pediatrics (1), renal Medicine (2), sexual health (1), surgery (2), urology (1) and infectious diseases (4). A range of doctors according to seniority were included: house officers (n=4), registrars (7), advanced trainees (2), consultants/staff specialists (11) and consultants/senior

staff specialists (5). In total, 9 females and 21 males were interviewed, reflecting the overall ratio of female-to-male doctors within the hospital of 1:2.5. During the interviews, we focused on their everyday sensitivity towards resistance and the self-reported individual and interpersonal factors influencing antibiotic decision-making.

### **Data analysis**

The methodology for this project sits within the interpretive traditions in sociology. The aim was to achieve a detailed understanding of the varying positions adhered to, and to locate these within a spectrum of broader underlying beliefs, agendas and life experiences. The approach to data collection was developmental, in that knowledge generated in the early interviews was challenged, compared with, and built upon by experiences and knowledge gained during the course of the fieldwork. This approach provided an opportunity to establish initial themes and then search for deviant or negative cases, complicating our observations and retaining the complexity of the data. We approached the analysis by conducting an initial thematic analysis, writing notes and discussing ideas within the research team. Within this process, we continually sought to retain the richness of the respondents' experiences, documenting atypical cases, conflicts, and contradictions within the data. Once we had identified a theme, we would search through the interviews for other related comments, employing constant comparison to develop or complicate these themes further. This process helped ensure that events initially viewed as unrelated could be grouped together as their interconnectedness became apparent. The final step involved revisiting the literature and seeking out conceptual tools that could be employed to make sense of the patterns that had emerged from the data.

### **Results:**

*Everyday sensitivity toward resistance*

While the focus of the interviews was on antibiotic prescribing practice and the use of judgment, we began each interview with explicit discussion of questions of resistance and the wider population issues confronting antibiotics. The focus was on exploring the participants' accounts of concern around antimicrobial resistance in everyday clinical work. There were mixed perspectives on the importance of resistance and its relevance to everyday clinical decisions:

Yeah, well it's definitely something that you consider, considering MRSA is so strongly talked about in the hospital. And in terms of resistance, our consultants and most of our bosses are usually not wanting us to prescribe antibiotics without considering what they're for, and the potential for resistance, and what exposures the patient's had before that might have... So, it is a consideration that you normally take when you are admitting a patient, or thinking about prescribing an antibiotic. [Non-consultant, Oncology, Female]

*Another respondent:*

We're seeing it aren't we? You know, we're seeing VRE, we're seeing MRSA, we are seeing these things, and we're seeing them more and more. And we're seeing them in the community, coming in fresh without having been in the hospital before. And if you know that your antibiotic prescribing patterns potentially affect that, and all the pain that goes with it. Like my Unit's closed again at the moment, because someone came over from [location] with VRE...now I can't take anyone into my new unit until we clear it. [Consultant, Geriatrics, Female]

It was evident in the interviews that the discussion of resistance and its importance was often talked about as "something we should be aware of" or as "there in the background". There was a consistent sense of resistance awareness as morally and professionally important, but not necessarily practical. That is, the majority emphasised that, relative to other day-to-day clinical considerations, antibiotic resistance was of limited concern at the bedside:

You've got to remember, just in terms of the degree of fear in the medical community... we see a lot of these multi-resistant organisms floating around, we know that they're bad and we realise that they have major implications for what our options are to treat people and what they will be in the future. But, in fact, there's little immediacy in the negative impact at an individual patient level. If we think about MRSA, well, we've got drugs, we treat MRSA, it's harder, you know, so it's there, but it's not as immediate as someone bleeding to death in front of you. [Consultant, Paediatrics, Male]

*Another respondent:*

I: How sensitive do you feel people are to the questions around resistance?

Oh, I don't think trainees are, at all...they're more worried about someone having an infection, they're more worried about the immediate clinical problem... I think as you get older, you tend to think more around a problem and you realise that a lot of things were better without you doing anything. What do they say? "Medicine is the art of keeping patients amused while nature heals the problem." [Non-consultant, Obstetrics and Gynaecology, Male]

*Another respondent:*

I think everyone knows [resistance] is happening, and I guess on a broad level everyone's aware of it. But when they're faced with an individual patient I suppose they're going to go on their clinical judgement. And I guess if they feel that a patient needs broad spectrum treatment...they're going to do that whether that's the right thing, in terms of resistance patterns or not. I think there's a lot of awareness of it at a higher [management] level. But when it comes to individual patients I think sometimes it is down the list I guess of considerations... [Consultant, Oncology, Female]

As shown above, and in the other participants' accounts, the question of resistance, while theoretically important, was of limited concern vis-à-vis other day-to-day issues. "Down the list of considerations", as the above participant articulated it, we were interested in delving into the norms and values that underpinned such conceptions of relative *importance*. As the

interviews continued, their accounts of the complexities of antibiotic prescribing practice and judgments about infection provided important insight into the role of risk in driving practice.

### *Risk, fear and uncertainty*

A key topic within the interviews was the participants' day-to-day antibiotic prescribing decisions including when to initiate antibiotics, what type to use and the question of duration (all key sites of uncertainty). Largely they focused on whether to initiate and choice of antibiotic, particularly narrow versus broad spectrum options. Specifically, how they balanced the plethora of risks evident in the context of potential or actual infection. Despite the variety of specialties, sense of risk was quite consistent across the participants:

I probably tend to over treat rather than under treat.

I: And why is that?

Oh, fear of relapse and uncertainty that they're going to get better. And actually lack of evidence-based knowledge in myself... Safety for us is not making a mistake, not missing something, where a patient has a bad outcome... mis-prescribing is more of [a broader] issue.

[Consultant, Paediatrics, Male]

*Another respondent:*

And I would err on the side of over-treating. In other words more extended spectrum, rather than undertreating in the first instance. That depends a little bit on the condition that you're treating, but in general terms. [Consultant, Respiratory Medicine, Male]

*Another respondent:*

And most of the time [in delirium] you feel like you're in a situation where you probably can't afford not to treat them, because it [infection] might be contributing to their delirium. And you know, these are people that can't tell you what their symptoms are. It's just an

unholy mess in terms of symptoms... And sometimes there may or may not be an infective component in that... On the whole, I tend to err on the side of giving them antibiotics.

[Consultant, Geriatrics, Female]

Overtreatment - utilising broad spectrum, prescribing prophylactic antibiotics, or beginning antibiotics without a clear rationale - was viewed as situated within a sense of risk that overtreatment was more favourable than the potential for adverse patient outcomes. In many respects this was about peer perspective and reputational risk. Specifically, the balance between being criticised for being too conservative versus being too careless. The participants talked about balancing the combined risks of being “arrogant” and “careless” versus being perceived as “weak” and unwilling to “make difficult decisions” for the greater good:

I'm aware that I don't want to be criticised for being either a cowboy or too cautious [in prescribing]. So, I want to do what is recognised as the standard of care. [Consultant, Emergency Medicine, Male]

*Another respondent:*

I think there's a couple [of risks]. First of all I think it's, lack of experience plays a big role in it. So you find junior docs you know, in a handover morning, you know “this guy had a temp of 38, so I gave him pip tazo.” [I say] “What were you treating?” [He says] “I am not sure but he had a temp of 38.” You know? So, there's a bit of inexperience... sometimes there's a fear of being ostracised you know, “the guy had a temperature and you didn't give antibiotics? Like, what the hell are you thinking man!”... [Consultant, Geriatrics, Male]

The stated fears of “missing something” and “fallout” from not prescribing heavily outweighed the potential embarrassment of unnecessarily prescribing. It was suggested that as they became more senior, their sense of risk shifted somewhat (i.e. reputational risk versus risk of adverse patient outcomes). That is, the senior doctors were more comfortable taking



on additional immediate risk whereas the junior doctors were focused more on ultra conservative practice in order to avoid fallout and being censured by consultants:

I don't want to prescribe the wrong thing and I'll look stupid, and I don't want to prescribe something that might have bad interactions and look dangerous...every decision being plagued with this possibility that you're being dangerous...we err between kind of passive stupidity and dangerous. Passive and stupid when we're not making any decisions and dangerous when we do... [Non-consultant, Surgery, Male]

*Another respondent:*

I think they [junior doctors] realise and know that they'll get into trouble if they don't treat community-acquired pneumonia appropriately on the night...if you're not sure, you should ask. But they feel that they should know the difference, and they don't ask...I mean, you can't ask about every decision that you make, and you have to decide when to ask. And they save up the asks for the really big things. [Consultant, Respiratory Medicine, Male]

*Another respondent:*

People are now like, you know "you're not allowed to die on my shift. So I'm going to do everything that I can, you know I'm going to do everything, just give you antibiotics or whatever you need, so that at eight in the morning someone else can make that decision."  
[Consultant, Geriatrics, Male]

What was evident in the interviews was the power of peer perception and the focus on minimising peer perception of immediate risk taking. A culture of learning to be independent and the perceived (lack of) importance of antibiotic decisions shaped their willingness to optimise prescribing in clinical terms by consulting more senior doctors. The disjunction between junior doctors' decisions and experiences versus those of the consultants was evident in the senior doctor's greater tolerance of risk:

As a general rule, I try to encourage practice and to encourage as narrow a spectrum as possible, within the bounds of understanding that I'm sometimes going to get it wrong with narrow prescribing. [Consultant, Emergency Medicine, Male]

While an ability to tolerate immediate (patient) risk in the context of antibiotic prescribing was emphasised by the senior doctors, the hierarchical hospital system (discussed in more depth below) reduced the capacity for consultation on issues not perceived to be core business, thus encouraging conservative (and sub-optimal) prescribing behaviour amongst juniors. Despite the good intentions from consultants, actual consulting etiquette and learning on the ward meant that antibiotic prescribing was conservative.

*Time, pressure and uncertainty*

A key organisational and intra-professional factor talked about as shaping antibiotic decisions was time and the pressure on the ward. That is, conservative practices were talked about as being situated within the day-to-day (differentiated) capacity of doctors at different levels within the medical hierarchy to reflect on, rationalise or be educated on appropriate antibiotic choices:

It [antibiotic choice] depends on the time of day that you're admitting the patient, and on a lot of other factors, whether you can ask your advanced trainee or your boss...sometimes you're busy... you've kind of heard half of the story, and you haven't fully done everything yourself, and it sounds like a good going infection.... [so you prescribe] [Non-consultant, Oncology, Female]

*Another respondent:*

[Juniors] feel they want to cover themselves in a situation where they might not have much time, I mean, might not be able to ask for advice at the time. [Consultant, Renal Physician, Male]

*Another respondent:*

...the ward rounds are extremely rapid, they're over in a flash, you don't even have time to look at the medication charts... [and] the junior is left to try and manage ...their fluid, their

electrolytes, their antibiotics, their DVT prophylaxis, and any other complications...

[Consultant, Renal Physician, Male]

While clinical uncertainty and sense of the precariousness surrounding the nature and seriousness of infections encouraged conservative decisions, there were also important practical role-based issues that pushed juniors (and sometimes senior doctors) toward over-prescribing or over use of broad spectrum options. Whilst the consultants were viewed as having more time and capital - and able to contemplate what constitutes appropriate prescribing within any given scenario - juniors were not often afforded such benefits, limiting their capacity to effectively assess risk and develop a balanced clinical judgement about short-term versus long-term costs. Such limits on time were viewed as intermingling with the enactment of medical benevolence, which we explore below.

#### *Benevolence and the emotional prerogative*

The practice and rhetoric of benevolence operates across all spheres of medicine and is a core assumptive basis of medical work. It is also a core part of *habitus* as seen in these doctors' accounts of their prescribing practices. Benevolence-in-practice interplays subtly with perceptions of risk and inflects decision making in the context of antibiotics. It articulates professional identity but also ascribes a certain role and set of expectations. Doctors express it as part of their professional role and identities and their patients and families expect it as part of their care. A key issue here is what the practice and performance of benevolence *does* in the context of antibiotic prescribing. It is a core principal of action in the hospital, and thus, it remains a key 'principle of the game'. Benevolence was most evident in the participants' accounts of their relationships with their patients and their emotional responsibility to provide all immediate therapeutic options regardless of wider population consequences:

I think that probably one of the most powerful influences [on prescribing], is that doctor-patient relationship, and that feeling of benevolence, and of course the, your relationship with

your patient is much stronger than your relationship with the hospital inpatient population and the microbial ether that we live in, you know? ...you've certainly got a much stronger emotional bond, don't you, with that patient? ...If you think about it it's ah, on an emotional or sort of a primal sense, it's my relationship with my patient, how well my patient goes, how my patient interacts with me, what they think of me I suppose, is critically important. And that's where it's hard to not prescribe antibiotics, where it takes effort. It takes a lot of effort not to prescribe an antibiotic when someone's asking for it. So there is also a patient expectation, a relative expectation...and a patient looking at you, and saying "why aren't I better?"...I probably tend to over treat rather than under treat. [Consultant, Paediatrics, Male]

Benevolence was performed and expected, and the "microbial ether", was viewed as relatively insignificant by comparison. The reflective capacity of the participants regarding the inter-subjective rules which governed their use of antibiotic use was revealing. Particularly the collective desire for feeling like "something has been done", as one participant stated, and the relational pressure from patients and families of not "going home empty handed":

It's often more difficult to discharge a family without antibiotics than with antibiotics. So there is a lot more explanation required, and that translates to time in a busy Emergency Department. They come in with their kid who's got a sniffle; a fraction of a fever, they're probably wanting Amoxil to go home with. So it will take me more time to explain that they don't need that Amoxil... [Consultant, Emergency Medicine, Male]

*Another respondent:*

[The] purpose in giving antibiotics sometimes is to keep the family happy... one of the worst things, is to try and stop antibiotics on people who are palliative. Really difficult. Family will let you stop virtually any other drug, but stopping antibiotics on a patient who they agree is dying is very, can cause very negative feelings within a family... So that's not prescribed for the patient, or for killing the germs, it's prescribed to alleviate the bad feelings for the family.

And if it's a cheap drug, and they look like they're going to survive 24 hours, then I would probably do it, continue the antibiotics. [Non-consultant, General Medicine, Male]

Families introduced an additional variable on top of patient expectations for "something to be done" and the pressure to perform the benevolent role (Lewis & Tully, 2009). The capacity to watch and wait was lessened. The lack of clarity about the nature of the infection thereby was perceived to lead to the necessity of broad spectrum prescribing in order to cover a range of unknown options:

I think it's easy to prescribe antibiotics, and it's easy to, and a broad spectrum antibiotic is far more, requires less thought, you feel a bit more comfortable that you've covered all the bases. Because inevitably when you narrow the spectrum, there's always a chance that, there is a risk that you have a particular organism that's resistant to that, that you're not covering it. [Consultant, Paediatrics, Male]

A related issue was the extent to which choice of antibiotics (i.e. questions of resistance, cost, wastage, for example) was actually a core or peripheral issue. While a minority of the participants considered it a core issue, for most, antibiotics hardly registered as significant:

No [antibiotics] it's a peripheral thing. I think to be honest, it's a peripheral thing. You don't go read up, I don't memorise antibiotic guidelines.... I don't bother reading up what's new in the last twelve months. Only when patients have allergies do you ever pull out antibiotic guidelines... [Consultant, Renal, Male]

*Another respondent:*

[My concern is] someone who's going to die in the next hour, or someone who's bleeding to death, or someone who's had a major pulmonary embolus. So antibiotic prescribing I think isn't viewed in the same light...we worry about this patient, and we don't have the big picture, so we don't worry as much about what's happening in the community, about resistance patterns, about community-wide use of antibiotics... [Consultant, Respiratory Medicine, Male]

These accounts link in with benevolence and the centrality of the *res ipsa loquitur* (i.e. the thing speaks for itself) in medical work more broadly. That is, immediate physiological improvement translating to good medicine. But it also reflects the view within the hospital that over-using antibiotics present fewer risks (i.e. cost blow-out, side-effects for patients, resistance) than potential limiting use. Benevolence, in turn, dovetailed with the participants' accounts with peer-related practice.

*Habitus and the internalisation of peer practice norms*

In addition to the aforementioned influences of risk and uncertainty, and time, patient and family pressures, the interviews illustrated the importance of peer-driven practice. Of note were their accounts of the socialisation of prescribing, with social capital talked about being accumulated through learning the norms and routines of the hospital (becoming 'competent'):

Oh I think [antibiotics prescribing is] peer-related practice, it's habit, and you learn from your peers, and presume there's a leadership issue, but our behaviours are heavily influenced by what we see, and people do around us, and by [the] modelling [of] others. So that I think is the probably the major issue...How we see our standing with our peers is very important to us. And so being seen as a good clinician is very important. So my patient's not doing badly, that's one thing that's very important...practising in an evidence based sense, that hasn't come through culturally. [Consultant, Paediatrics, Male]

*Another respondent:*

So, I think the people who would do a third or fourth degree [vaginal] tear while that consultant was on duty would undertake antibiotic prescribing according to [that consultant's] practice. And then if you were [seeing a patient] outside of that consultant's duty day then you would do whatever that [other] consultant normally does. [Non-consultant, Obstetrics and Gynecology, Female]

*Another respondent:*

P: Even though, like if you go to the guidelines there's sort of multiple different [antibiotics] and a range of doses. But you know, if you went with a dose that they don't usually use on orthopaedics, then people would be looking at you a little bit strange.

I: Where do those conventions kind of come from?

P: I have no idea! Yeah, they just seem to be the doses that everyone uses. There seem to be conventions and doses and things which everyone seems to know from somewhere. I don't know, I'm assuming that someone's checked them at some point! [laughs] [Non-consultant, Orthopaedics, Male]

As described above, antibiotic choice and prescribing practice are heavily influenced by their habitus, with social capital able to be gained by learning the rules of the game. In this sense habitual antibiotic use and peer-related practice interplay to mediate choices within everyday clinical work. These accounts also resonate with Bourdieu's notion of *doxa* where their feel for the game (in this case prescribing behavior) is often taken-for-granted or below consciousness. What this points to is how prescribing decisions are governed including recognition of how 'the way others do it' are reproduced and internalised by doctors. Such dynamics also resonate with notions of fraternal obligation (Freidson, 1988) where doctors may perform etiquette to their peers through and by adopting similar decision-making strategies, irrespective of individual preference or opinion (see also Björnsdóttir & Hansen, 2002).

#### *Hierarchies and the localisation of antibiotic prescribing*

Organisational and professional cultures have been shown to heavily shape prescribing behavior as well as medical work more broadly. In the interviews the participants emphasised the co-mingling of localised hierarchy and clinical autonomy. That is, the dual process of cultural resistance to *challenging prescribing* (up the hierarchy) and a pressure to make

*independent antibiotic choices* (down the hierarchy). The hierarchy was viewed as producing a culture of guesswork and ultimately conservative prescribing:

So I've kind of been institutionalised in a way that you have your tiers, you know that's the set-up, sort of like being in an army I guess. You've got your bosses and then you move your way down the ladder to keep organised troops [laughs]. So I think they think it's educational that the residents should make the calls [about antibiotics], or be involved at that level. But in actual fact it's not. It would be educational if they [consultants] told the resident what they wanted, but half the time [residents are] just guessing. [Non-consultant, Infectious Diseases, Female]

*Another respondent:*

In terms of challenging them [consultants], as a junior doctor you're also not so confident with your own knowledge, and you have to look a lot of things up. So having the confidence in my own knowledge, to kind of say something to someone who is more senior than me - I probably wouldn't, unless I thought that - unless I knew, or thought that it would negatively impact the patient, or something like that. [Non-consultant, Oncology, Female]

As shown in the excerpts above, hierarchies did not shape antibiotic prescribing simplistically by merely imposing idiosyncratic practices down the hierarchy. Rather, practice and choice were influenced by the strength of capital with questioning and consulting not necessarily actively supported. The idea of learning to doctor (i.e. learning to make autonomous decisions) and the medical rite of passage (i.e. learning to cope with pressured/difficult situations) were talked about as shaping the lack of capacity to consult regarding antibiotic prescribing. Moreover, certain units preferred specific combinations or options and the idea of contesting existing practices (even from the perspective of senior consultants) was unappealing. This dynamic was often evident when participants had adapted when shifting hospitals:



So I prescribed as I used to at my old hospital because that's what I was used to. And then when I came here I was told that that probably wasn't a good idea. And the question was asked "why do you prescribe what you do?" And of course, my very bad answer as a registrar was "because that is what I have done for two years." [laughs] [Non-consultant, Obstetrics and Gynaecology, Female]

*Another respondent:*

Some of the habits I've picked up are guidelines driven but derived in another hospital, and I carry that over here sometimes. Until I get familiar with "oh, okay, look this is now the new practice, this is now the new recommendation," alright I'll change it now. Do I keep up with antibiotics? Only via osmosis on the ward. [Consultant, Renal, Male]

It emerged in the interviews there were inter-institutional and intra-institutional factors in the mediation of prescribing practice. That is, the shift across institutions tended to reveal the habitual and localised character of much antibiotic prescribing. This often presented junior doctors with challenges in adapting their practices. Moreover, the specific rotations of junior doctors resulted in the absorption of certain approaches to prescribing which were to a certain extent carried across specialties until they were corrected by senior doctors. Antibiotic prescribing, in sum, was viewed as variable, shifting and adaptable to a given context, regardless of best practice or therapeutic guidelines.

## **Discussion**

Here we have focused on capturing the social context of the practice of antibiotic prescribing. What the interviews illustrate is that 'sub-optimal' antibiotic use is a realistic and practical choice within the habitus of the social world of the hospital. The 'game' is more geared toward protecting patients, managing time pressures, gaining and achieving social capital, and expressing a benevolent identity, than it is about the threat of antimicrobial resistance.

These doctors' practices are governed by external factors at a *local* level. That is, they are disciplined into habitual practices that do not necessarily correlate with therapeutic guidelines or current best practice. This process operates through the internalisation of forms of risk. First, the universal threat of antimicrobial resistance. Second, and more potent, the *social risks* including the peer-based and hierarchical reputational consequences associated with "not doing enough". Third, the emotional and relational pressures to "do everything possible" for a patient/family. The interviews showed that, even for the senior doctors, the latter two far outweigh the former.

Given this, it is clear that decisions around antibiotics are (at least in this context) governed *less* by stewardship initiatives, therapeutic guidelines and other techniques of bureaucratic routinisation, than by what constitutes appropriate behaviour within professional hierarchies, and the securing of professional reputation. This resonates with previous work in the area on etiquette (Charani et al., 2013) and fraternal obligation (Björnsdóttir & Hansen, 2002). But a key question remains - what holds people to localised practice, particularly when it is explicitly *reflected on* as localised?

The results suggest that social capital plays an important role in drawing in and retaining players. Within the social world of the hospital, few individuals have sufficient social capital to resist the rules of the game, despite recognition that they may be arbitrary. This is not to say they are unconscious of this, indeed, the majority of participants here illustrated reflexivity. Habitus was not purely below the level of consciousness. While the interviews do provide examples of 'practical faith' or doxic knowledge (Bourdieu, 1990: 68), they also reveal an awareness of the threat of resistance, and awareness that the process of adapting to and perpetuating current norms of practice *is a game*. As such, antibiotic prescribing

decisions were often described as taken-for-granted because of a conscious investment in the game and its associated presuppositions. Put simply, by actively participating in the well-established and competitive culture of medicine, social capital could be more easily accrued. Participation in peer-driven and hierarchically-shaped practice, although frequently described as arbitrary and artificial, offers the potential for greater reward than opting out.

An important point here is that the turn toward neoliberalism has promoted individualised, self-disciplined, entrepreneurial techniques of governance. This involves what Bourdieu called 'knowledge without concepts' where the social order is progressively inscribed in people's minds (Bourdieu, 1984). For Bourdieu (i.e. in the context of *habitus and doxa*), power results in the internalisation of external structures, and is in turn often reflected in individuals' normalised, coherent, systematic and regulated actions and practices. Thus, for practices - in this case antibiotic prescribing - to change, the solicitations of the field must change (i.e. the game and its rules). If doctors' prescribing practices (and professional rewards) are governed by micro-social peer networks, hierarchies, and the pursuit of a benevolent identity, clinically 'sub-optimal' prescribing will persist. Resistance does not represent a sufficiently serious risk, as compared to the local and often more acute social, professional and clinical costs. It is also important to emphasise that prioritising immediate risks as a principle exists for a reason. The principles and dispositions which make up habitus prepare doctors to cope with unforeseen, time-limited and ever-changing situations. Such principles within the hospital prioritise individual patient care (the practical) and professional credibility over the threat of resistance (the abstract) (Lewis & Tully, 2009). As such, while there may be costs associated with the current principles within the field, the costs of countering principles such as benevolence, immediate patient wellbeing and clinical

autonomy, may introduce problems even more considerable than 'sub-optimal' antibiotic prescribing practices.

A key question here is why is the game manifest in this particular way and how might this be different from other spaces within a health system? It is worth returning to the fact that this study provides insight into habitus within one particular context of antibiotic use and infection control. Furthermore, that there are distinct spheres of practice within health systems whereby rules and norms develop, exist and perpetuate (Ahmed & Jones, 2008). Some of these include primary care, secondary care and epidemiology; each holding and espousing a series of complex and at times competing expectations and rules to which doctors are required to respond to (Armstrong & Ogden, 2006). The hospital holds a specific mix of these concerns - what may be described as the dialectical relationship of habitus and material context. While in primary care contexts doctors may utilise their capital to minimise patient preference for antibiotics (cf Heritage & Stivers, 1999), in the acute hospital context, time constraints, fear of mortality, and the hierarchical delegation of risk, means that the rules of this particular game are more orientated to immediate risk reduction and thus conservative prescribing practices. Good doctoring within the habitus of the hospital is thus different to what it is in primary care or from an epidemiological perspective.

What this means is that managing infection control is intimately tied to understanding and managing spaces and sites of practice. In turn, understanding the dialectic between habitus and material context is crucial for the future development of strategies to better regulate antibiotic use. For future studies this will also mean exploration of the influence of other stakeholders on antibiotic practice within the hospital including nurses, pharmacists and other key players. In sum, we argue that the accumulation of capital enables us to understand what

drives practice in a particular space. Moreover, that antibiotic use be understood as a social game, rather than being driven by, for example, what is recommended in the therapeutic guidelines. Such an understanding will provide a crucial means for supporting organisational and practice change.

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