Antibiotic optimisation in 'the bush': Local know-how and core-periphery relations

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A B S T R A C T

The growing global concern around antimicrobial mis-use and proliferating resistance has resulted in increasing interest in optimising antibiotics, particularly in hospitals. While the agenda to tighten antibiotic use has been critically explored in metropolitan settings, the dynamics of rural and remote settings have remained largely unexplored. Drawing on 30 interviews with doctors, nurses, and pharmacists in a remote Australian hospital, we focus on the pertinence of setting, and its importance for contextualising and potentially achieving antibiotic optimisation. Building on previous work on the dynamics of locale and core-periphery relations, here we consider how antimicrobial practice is deeply embedded in experiences of being on the geographical periphery, and crucially, at the periphery of (established) knowledge.

1. Introduction

The proliferation of antimicrobial resistance has seen the roll-out of strategies - under the rubric of antimicrobial stewardship[1] - to better govern antibiotic use in healthcare (Barlam et al., 2016). Yet, optimisation strategies have produced disappointing results, often resulting in minimal changes to practice within hospitals (ACSQHC, 2015; LaPlante et al., 2016). From a social science perspective, one important aspect of the limited potency of existing stewardship activities is that it is not simply a matter of streamlining practice, illustrated in the burgeoning work highlighting the limitations of placing bureaucratic restrictions on antibiotics or roll-out of clinical guidelines (Broom et al., 2014; 2015a, 2016b; Charani et al., 2013). Rather, there is a growing awareness that the tightening agenda is dependent on an understanding of, and responsiveness to, what drives practice across settings. Thus far, very little attention has been paid to what occurs in rural or remote hospital settings (Pammett and Ridgewell, 2016), or in hospitals with limited resources (although see Anderson and Sexton, 2008; Harrod et al., 2014; James et al., 2015; Yam et al., 2012). As work continues on how practices can be influenced in (relatively) well-resourced, urbanised contexts, we sought to expand the analysis of

antibiotic optimisation by asking, what is occurring in 'peripheral' settings, and what might be the potential implications for the broader streamlining agenda? Our exploration, in turn, raises broader sociological questions around situated *and* situating care, the nexus of practice and biographies (both patient and clinician), and the dynamics of core-periphery relations in the governance of everyday practice.

2. Background

In a global environment of concern over mis-use of antibiotics, emerging literature is capturing the social dynamics of this critical problem (e.g., Broom et al., 2014, 2015b, 2016a; Charani et al., 2013; Rodrigues et al., 2013). A central question is not just *what* should be done (i.e., restricting or reducing antibiotics) but *why* current practices of infection management occur, and why many clinically 'suboptimal' practices endure. This direction for enquiry has emerged from research revealing that initial attempts to curb antibiotic usage in many OECD healthcare contexts has had limited impact. Namely, implementation can be slow, hindered by institutional norms, and success is contextually-contingent and difficult to measure (Ohl and Dodds Ashley, 2011; Reddy et al., 2015). While social science scholarship has covered

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[1] The central aims of antimicrobial stewardship programmes are to improve the treatment of infections and reduce adverse events associated with antibiotic use, by increasing 'correct' antibiotic prescribing. Stewardship programmes are now a requirement in Australian hospitals and accreditation is now reliant on having governance structures in place (ASQHC, 2015).

some of the complexities of changing infection management and antibiotic optimisation – for example, team-based complexities and hierarchical influences (e.g., Broom et al., 2014, 2015b, 2016b; Kirby et al., 2017) – there has been little exploration of institutional distinctions or the dynamics of remoteness. Thus some consideration of the importance of periphery is necessary.

2.1. Considering core versus periphery

There is considerable social science research on the specificities of healthcare in rural and remote environments (e.g., Bourke et al., 2012; Brameld and Holman, 2006; Farmer et al., 2010; Prior et al., 2010). Much of this work has illustrated that in exploring remote contexts it is important to avoid a *linear othering* and to accommodate the particularities of the people and setting (Bourke et al., 2012; Cummins et al., 2007). We recognise this and aim to balance the dynamics of remoteness with an account of on-the-ground complexity. Yet, there are important structural characteristics of remote environments, as is the case for the context we examine here. These include lower levels of funding for health services per capita, fewer doctors per patient, fewer, if any, specialists in infectious diseases, a transient workforce, and, a more vulnerable, dispersed, less (formally) educated, 'transient', and sicker population (e.g. Brameld and Holman, 2006; James et al., 2015; Mc-Bain-Rigg and Veitch, 2011). However, such notions and structural characteristics, are defined in relation to a normative, metropolitan 'average'. Thus, we treat the concept of periphery as contestable and build our exploration from the lived experiences of those working in our fieldsite. Notwithstanding these considerations, what is clear is that geographical distance, structural, and socio-economic factors create a particular health service milieu, and shape relations with the perceived 'core' (often articulated as a powerful, metropolitan centralised, decontextualised Other). This, we argue, is central to understanding local praxis, the importance of locale, and the limits to enacting (stewardship-inspired) change in infection management. To enact change, we posit, first requires an exploration of context-specific norms of practice, core-periphery relations, and the nuances of particular populations (e.g., patients, staff, Indigenous peoples, transient populations) (James et al., 2015). Hitherto, such understandings have been largely absent from the literature in this area.

2.2. Context-sensitive infection optimisation

The themes discussed above speak to the broader importance of context-sensitive healthcare policies and practices (Frohlich et al., 2001; Nettleton, 2013; Williams, 2003). With regard to standardisation in medicine, and specifically in infection management, contextualising practices can be a challenging requirement. For antimicrobial stewardship in Australia - and in other contexts (e.g. Pollack et al., 2016) - committees and statutory bodies exist to regulate practices nationally (ACSQHC, 2015). Yet, the successes of the implementation of antimicrobial optimisation across hospitals in Australia is highly uneven, with varied degrees of resources and activities allocated (Avent et al., 2014; Chen et al., 2010). Variation can be compounded by geographical location, different patient population needs, and differing degrees of access to infectious diseases expertise (e.g., Harrod et al., 2014; James et al., 2015). In the case of a hospital situated in remote Australia, the provision of health services and clinical decision-making can thus be moulded (and often constrained) by the diverse needs and available resources within a community that is simultaneously close-knit and open to flux (e.g., small, dispersed populations; fly-in/fly-out mine workers; socio-economic disparities; 'tough' dispositions, etc.) (Bourke et al., 2012; Brameld and Holman, 2006). Conversely, guideline recommendations for preventing hospital-acquired infections, for example, are often based on models of care suitable for well-resourced centres, and those caring for metropolitan populations – at times

highlighting disparities across patient populations, resources, and even priorities between metropolitan and remote hospitals (Harrod et al., 2014). In such a context of 'making do' - in the context of limited resources – externally-imposed priorities, such as stringent antibiotic guidelines, could appear incongruent with the values, concerns, and realities of remote healthcare. Further, decontextualised national guidelines may evade the unique requirements of 'the periphery,' in turn positioning such locales as unruly and unregulated (Dywili et al., 2012; Harding et al., 2006).

Drawing on the accounts of clinicians working in a remote setting, we argue that emphasis on social, geographical and economic context is required in actualising and resourcing antibiotic optimisation. Specifically, stewardship should necessarily be responsive to remoteness, community sensibilities, environmental dislocation, subcultures, power relations and strength of social ties, as well as other contextual dynamics which shape what happens day-to-day in rural and remote hospitals in Australia and beyond (Anderson et al., 2009; Brameld and Holman, 2006; Cummins et al., 2007).

3. Methods

Working within an interpretive framework, we conducted semi-structured interviews across a remote hospital in Australia, to examine the experience of using antibiotics from the perspectives of multiple stakeholders (i.e., doctors, nurses, pharmacists, management). After ethical approval was obtained (anonymised), the study was advertised across the hospital, while participants were sampled purposively (for key positions within the hospital) and for maximum variation (ensuring representation across professional group, specialty/ward and gender). Thirty-five initially agreed to participate, 30 were interviewed face-to-face. Three participants withdrew owing to scheduling conflicts, and two decided not to participate as they did not want to be recorded. Interviews were conducted by [anonymous] and [anonymous], ranged between 30 and 60 min, and were audio recorded and transcribed verbatim. Participants included: doctors (n = 13), nurses (13), pharmacists (3), although several participants held dual clinical and managerial roles (7). The sample included 23 women and 7 men. Interviews were guided by questions regarding participants' experiences of antibiotic usage, experiences of inter-professional relations, and perceived values and experiences of working in a remote setting.

The methodology for this project draws on the interpretive traditions within the social sciences, and specifically, on Charmaz's approach to social analysis (1990). 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 and/or agendas. Data analysis was based on four questions adapted from Charmaz's (1990) approach: What is the basis of a particular experience, action, belief, relationship or structure? What do these assume implicitly or explicitly about particular subjects and relationships? Of what larger process is this action/belief and so forth a part? What are the implications of such actions/beliefs for particular actors/institutional forms? The approach used was developmental, in that knowledge generated in the early interviews was challenged, compared with, and built on by later ones. We approached the analysis of the interviews thematically, seeking to retain the richness of experiences, documenting atypical cases, conflicts, and contradictions within the data. Finally, we revisited the literature and sought out conceptual tools that could be employed to make sense of the patterns that had emerged from the data.

4. Results

4.1. Remote exceptionalism and notional abnormality

Depictions of patients, across the interviews, provided a rich account of intersections of health, place, and biographies, and the flow-on effects for how clinicians manage infections and perceive the