PROFESSIONS & PROFESSIONALISM

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Prescribing Antibiotics: General Practitioners Dealing with "Non-Medical Issues"?

Abstract: The medical professions will lose an indispensable tool in clinical practice if even simple infections cannot be cured because antibiotics have lost effectiveness. This article presents results from an exploratory enquiry into "good doctoring" in the case of antibiotic prescribing at a time when the knowledge base in the healthcare field is shifting. Drawing on in-depth interviews about diagnosing and prescribing, the article demonstrates how the problem of antimicrobial resistance is understood and engaged with by Danish general practitioners. When general practitioners speak of managing "non-medical issues," they refer to routines, clinical expertise, experiences with their patients, and decision-making based more on contextual circumstances than molecular conditions—and on the fact that such conditions can be hard to assess. This article's contribution to knowledge about how new and global health problems challenge professional actors affirms the importance of such a research agenda and the need for further exploration of the core problems posed by transnational sociology of professions.

Keywords: Transnational jurisdiction, Abbott, antibiotic resistance, clinical practice, Danish GPs, non-pharmacological basis of therapeutics

Antimicrobial resistance (AMR) has become an urgent public health concern, sometimes represented as marking the end of a "golden age of medicine" (Washer & Joffe, 2006, p. 2141). The AMR problem is one of very few exceptions where the global as well as the national public—such as the World Health Organization (WHO), the European Commission (EC) and national health authorities—is questioning the authority of professional to monopolize treatment decisions when excessive use of antibiotics is considered to be the most important driver in the development of AMR. However, the phenomenon of antibiotic overprescription and resulting resistance cannot be grasped on its own. To explore what happens when medical doctors encounter political claims in their clinical work—such as claims from transnational as well as national organizations, which might impinge on professional tasks and practice—is the key objective of this article.

The sociology of professions is opening up to the topic of how global transformations have an impact on the professions—and vice versa (Brante, 2011, Evetts, 2011, Faulconbridge & Muzio, 2011). However, while important work is being done, for example, on transnational professional networks (Seabrooke & Tsingou, 2015), an urgent question has yet to be systematically explored: that is, how actual professionals have an impact on and are themselves influenced by, the changing local as well as global contexts of professional work. Professional relations, and not least

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work, are organized via jurisdictions that are, according to Abbott, defined as problem-spaces linking professional groups to particular work tasks over which they claim expert authority (1988, p. 20). The jurisdictional core task for the medical profession is to cure. As Abbott has noted, a profession like medicine, which already is compact with a formally rich body of knowledge, will "lose strength in its current jurisdictions if it claims yet another one, forcing its justifying abstractions to the limits of vagueness" (Abbott, 1988, p. 104). If the knowledge system is relatively logical, rigorous and scientific, the jurisdiction is more prestigious and untouchable (Abbott, 1988, pp. 104-108). So what happens when a problem-space, in this case, prevention of antimicrobial resistance, is "vacant" (Abbott, 1988, pp. 88-91)?

This article contributes insights into how locally situated medical professional work, in this case, general practice in Denmark, is interrelated—or not—to large-scale problems such as AMR. Following significant strands within the sociology of professions, the article focuses on the manner in which the problem of antibiotic use is understood and engaged with by general practitioners (GPs). This should be seen against the background of how the total consumption of antibiotics in primary care, even within the past decade, has increased considerably in Denmark (DANMAP, 2013). Our empirical material addresses knowledge garnered from individual doctors' professional experience more than it does science-based knowledge. In demonstrating how the problem of AMR is understood and engaged with by Danish GPs, this article suggests that what GPs consider as "non-medical issues" are linked to important sociological areas of study about new health problems challenging professional actors, sometimes in indirect ways. Such a contribution to knowledge about GPs' practices and reflections affirms the importance of a research agenda grounded in the jurisdiction as a dynamic view of the dominance over areas of work. Drawing on Abbott's (1988; 2005) vocabulary allows us to discuss dynamic processes in the workplace, as his view of jurisdiction links not only to "closure" but also, indeed, to jurisdictional activities. Insofar as our analysis approaches the work task, prevention of antimicrobial resistance, from a "linked ecology" perspective (Abbott, 2005), yet concentrates on a microsociological and mainly mono-professional empirical field, it points to the need for further exploration of the core problems posed by transnational sociology of professions.

Regulatory boundaries of general practitioners' work

In Europe, an estimated 25,000 people die each year from multidrug-resistant bacteria, and the loss of productivity incurred by resistant bacteria is estimated at more than 1.5 billion euro per year (EC, 2015, p. 4). However, AMR poses considerable dangers to public health all over the world, and a key objective of current policy interventions revolves around "prudent use" and control of existing antibiotic agents as stated by the WHO (2014, pp. xiii & 1). Subsequently, there has been a strong emphasis on the need to implement national guidelines grounded in evidence-based science and best practice in medical treatment (EC, 2012, p. 2).

Denmark was among the first countries to develop comprehensive surveillance and control by creating the institution of the Danish Integrated Antimicrobial Resistance Monitoring and Research Program (DANMAP) in 1995. Although international European surveillance suggests that the Nordic countries are among the least infected (ECDC, 2013), recent surveillance by DANMAP also indicates that the public health problem of AMR is accelerating:

> The consumption in primary healthcare accounts for 90% of the total antimicrobial consumption. The proportion of broad-spectrum agents was 5% higher in 2013 compared with 2012. Since 2004, the overall consumption of antimicrobial agents in humans has increased by 20%. For broad-spectrum agents, the increase has been 72%. (DANMAP, 2013, p. 15)

In response, guidelines have been issued by the Danish Health Authority (SST) to ensure a more "rational" use based on clear indications before treatment and use of antibiotics less susceptible to encouraging resistance (SST, 2012, p. 5). Recently, the Danish Medical Society for General Practice (DSAM), the society representing GPs, complemented this recommendation with comprehensive clinical guidelines that also emphasize rational use and target the treatment measures necessary. However, these guidelines further emphasize that diagnoses grounded in evidence-based science might not be feasible in clinical situations (DSAM, 2014, pp. 6–7).

The ambiguity of guidelines

Empirical studies within organizations and indeed science studies on medical standards and guidelines have indicated that guidelines do not necessarily reduce variations in local practices and institutionalized patterns (e.g., Timmermans & Kolker, 2004; Zuiderent-Jerak, 2009). Standardizations and guidelines may sometimes transform practices but do not prevent diversity and local specificities (Castel, 2009, p. 745). Castel has shown that they may even enhance variations since guidelines are used strategically by individual and groups of physicians (2009, p. 745).

It is well recognized, for example, within the literature on deprofessionalization and proletarianization (e.g., Britten, 2001; Weiss & Fitzpatrick, 1997), that there are extraneous pressures on clinical behaviour (Larsen, 2016), and literature on doctor-patient encounters has shown that patient pressure can act as an incentive to influence doctors' behaviour (Stivers, 2007). However, as the sociology of the medical profession, in general, has stated, the cornerstone of professional identity remains predicated on clinical autonomy, and practitioners claim discretionary power to handle various practices (e.g., Armstrong & Ogden, 2006; Larsen, 2016). Drawing on our empirical findings, we will use the discussion section to link how GPs defend clinical autonomy, for example, when describing how guidelines are not able to cover clinical complexity, with a discussion of how prevention of AMR is considered—or not—by GPs as a task area.

In Hemminki's "Review of literature on the factors affecting drug prescribing", which appeared in *Social Science and Medicine* more than four decades ago, he wrote:

> If only medical factors influence prescribing, the variation in prescribing practices might be explained by differing patient populations but many other factors … have been found to affect prescribing. (Hemminki, 1975, p. 111)

Armstrong and Ogden have cited this and noted that several researchers have since tried to identify what has been described as, for example, "the non-pharmacological basis of therapeutics," "extraneous influences," "the idiosyncrasies of individual practitioner judgement" or, as they themselves sum up such factors, "the alternative sources of influence," to offer a more rational basis for prescribing (2006, pp. 951–952). More literature has dealt with strategies to help disseminate more appropriate treatment advice (e.g., Lugtenberg, Zegers-van Schaick, Westert, & Burgers, 2009) than to identify *why* many of those strategies, for example, dissemination of information, did not seem to change professional practice (Bero et al., 1998). There appeared to be "no magic bullets," as Oxman et al. (1995) have put it. A need for multifaceted solutions (Haines & Jones, 1994) remains the only solution to bringing about a policy of rational treatment. Armstrong and Ogden (2006, p. 953) sum up that "multiple source" models have been identified, but that these are generalized accumulation models.

This article will focus on which "alternative sources of influence" GPs acknowledge in their reflections and descriptions of experiences with issues of anti-

biotic prescribing. That is, the article will look at how—and why—antibiotic prescribing sometimes is linked to a dilemma; for example, should a GP's decision to prescribe antibiotics be based on a patient's risky although not molecular conditions or strictly follow guideline recommendations in order to reduce antibiotic usage? How does a GP handle an individual patient's health challenges while at the same time considering the global AMR problem? The particular jurisdictional task, prevention of AMR, can be conceptualized by what Abbott terms "external forces" (2005, p. 246), rather than by professions seeking new ground. However, as the analysis and discussion will show, not only external but also internal forces are at play when the GPs' own scientific society, DSAM, in light of the AMR problem has developed comprehensive clinical guidelines for antibiotic prescriptions (DSAM, 2014). Guidelines embody the extent of medicine's jurisdiction (Timmermans & Kolker, 2004, p. 178), and we consider antibiotic usage a matter of how jurisdictions work, that is, usage is subject to the regulatory boundaries of professional work (Abbott, 1988; 2005). Abbott approaches jurisdictions as dynamic "problem-spaces" and interprofessional competitions as open-ended (Abbott, 2005). Our empirical findings will hint at jurisdictional activities at the workplace level when clinical complexity interferes with guidelines' knowledge base.

Methods: Casing the professional practices of "prudent use"

This article is based on a study in which we collaborated with a large group of researchers from four faculties on the project *UC Care—University of Copenhagen Research Centre for Control of Antibiotic Resistance*. Our sociological subproject "What is good doctoring when antibiotic resistance is a global threat?" is based on empirical materials such as documents (standard procedures, guidelines, registration forms), qualitative in-depth interviews with GPs, and notes based on meetings with microbiologists and medical scholars about clinical practice, all collected in 2015−16. The decision to interview provided access to agendas, as well as to understandings and opinions held by GPs, about the global health issue of AMR. The interviews concentrated on the following: (i) in which activities are the GPs' called upon to exercise their judgements, and (ii) how do the GPs know whether they have made the right decision in prescribing antibiotics in a variety of specific situations. Drawing on abductive analysis (Tavory & Timmermans, 2014) of the empirical material, we explored how a range of dilemmas and problems preoccupy the general practice field.

Access to the field was acquired with the help of a medical scholar via open invitations in an online forum for GPs. This access allowed for contact with GPs all over the country, representing urban as well as rural populations. We contacted a limited number of the interviewees by the snowball method to cover almost all regions of Denmark. The in-depth individual interviews were conducted by the authors, together or singly, and 21 GPs were interviewed for between 60 and 80 minutes. Most interviews were conducted in the GPs' offices; three preferred to be interviewed in a meeting room at The University of Copenhagen. The interviewees were selected with a view to ensuring as broad a range as possible in terms of gender, age, geographical location and occupational experience. As an extension of this sampling strategy, we pursued, in particular, an interest in different occupational experiences arising from forms of practice, solo as well as group practices. We aimed to explore when, where, and why (or why not), as well as how, the AMR problem was reflected by a range of GPs in different situations and locations.

The interviews followed a semi-structured interview guide formalized around the following themes: (a) daily treatments of patients; (b) guidelines and recommendations; (c) respiratory tract infections (RTIs); (d) attitudes towards professional engagement with antibiotic usage considered as a global issue. RTIs were taken as an example of diagnoses owing to recent evaluations of general practice, which have

shown that such infections remain a leading reason for prescribing when in fact only 20 % of the prescriptions are medically necessary (Llor & Bjerrum, 2014, p. 8). The guide included questions and presentation of statistics that were meant to invoke engagement, evaluation and judgement of unresolved issues of antibiotic usage. To this end, we based our interviews on descriptive questions concerning the concrete experience of handling antibiotic treatments, and from these questions, we sought to gain a dense array of examples (Spradley, 1979, pp. 78–91). Questions such as "Can you describe the situation when you most recently prescribed antibiotics?"; "Could you tell me of a situation…?" or "Can you provide an example of…?" were significant in helping us to learn more about how GPs engage with antibiotic treatments.

This method opened the way for so-called "in-vivo" terms (Spradley, 1979, pp. 78–91), which are words and concepts used by the GPs themselves. We included important in-vivo terms in the interviews that followed to obtain a deeper understanding of the terms, or maybe to set them aside if other interviewees did not recognize the terms. For example, some of the first interviewees referred to so-called "non-medical issues" concerning specific patients or situations they as GPs had to or wanted to be aware of when deciding whether or not they should prescribe antibiotics. Thus, in the interviewing process, we created a second set of questions that called for free reflections on and evaluations of certain terms or framing. It means we came close to a conceptual interview (Kvale & Brinkman, 2009, pp. 151–153) that explored the meaning and understandings attached to certain notions.

The interviews were taped, transcribed and analysed by examining uncertainties, ambiguities or controversies between what was valued and how things were done, just as we allowed the GPs to delineate and position themselves in the social landscape of other professionals and pressing concerns in the antibiotic field. That is, in view of the themes mentioned previously, we have sought to acquire knowledge of different valuations that sustain professional jurisdictions and make it possible to look more closely at this open question: What is good doctoring when AMR is a global threat? (see Pedersen & Jepsen, 2018). In line with our methodological concern, the study did not attempt to provide a representative picture of how GPs as a whole understand and engage with antibiotic usage. Adopting a qualitative approach, we took as our directive to explore how a range of dilemmas and problems characterize the field of general practice and to address issues of good doctoring within the article's theoretical position.

The elements of informal knowledge and practical tasks identified in this article have emerged mainly from what GPs reported in the interviews. The findings are based on the explanations and understandings that GPs themselves used to account for their actions. We wanted to gain insights into clinical practice and how GPs conceived of their handling of antibiotics and sought to cope with AMR. Of course, we have been careful and systematic in how we gained our insights and wrote about them, but we assume significant variation among GPs' practice and experiences, an element our research material as designed might not be able to show, as we did not observe GPs performing clinical work, for example. Yet our sampling strategy presented above was developed to acquire insights into variations. After we had conducted just a few interviews, we noticed that clinical conditions such as having a solo or group practice, a long or short work experience, and a heterogeneous or relatively homogeneous group of patients—for example, relatively old or young, many or few immigrants, long or short distances travelled by patients to attend the clinical practice—were aspects that the GPs themselves mentioned as important to the kinds of challenges they experienced.

From the perspective of our concern with professional practice and owing to the current lack of knowledge about the character of the jurisdictional task—how prevention of AMR works—the themes we have focused on are based on existing literature and studies; they rely, as well, on what discussions with key persons have revealed to be significant to exploring situations of antibiotic usage in the clinical setting. In order to protect the privacy of the interviewees, they have been assigned

numbers. The analysis as follows focuses on the resources, understandings and capacities used by the interviewees to handle diagnosing and antibiotic prescribing in light of the AMR problem.

Global disturbances in local general practice?

Patients are not alone in being expected to demonstrate adherence, in their case, to doctors' advice. In recent decades, as the development of clinical practice guidelines has boomed, doctors have been expected to demonstrate adherence to such guidelines that create challenges in clinical practice (e.g., Timmermans & Kolker, 2004). Closer examinations of how medical professionals engage with infections, in particular, RTIs, have shown in a range of contexts that the social dimension of how a disease is understood and engaged with in a clinical context is significant for GPs' work (e.g., Kumar et al., 2003; Lugtenberg et al., 2009). Such studies have found that the culture of prescribing is influenced by the nature of daily practice, which is shaped by various non-pharmacological factors such as a good doctor-patient relationship, pressures of time, lack of energy to resist demands, and uncertainty in diagnosis. The studies indicate that "conflictual situations" are integral to the orderly routine that GPs are faced with in the case of diagnosing and antibiotic prescribing (Stivers, 2007).

In this analysis, we concentrate on the theme of "non-medical issues" that appeared as an in-vivo term in our meetings with doctors about the AMR problem, as well as in the interviews with GPs. It refers to the GPs' routines, clinical expertise and experiences with their patients, and is a term used to explain dilemmas and decisions based on more contextual circumstances than molecular conditions—as well as on the fact that such conditions can be hard to assess. Current daily practice for Danish GPs is likely far from the scenario outlined by the WHO, in which the medical profession will lose one of its most important tools in clinical practice if even simple infections cannot be cured. However, almost all of the interviewees said that they regularly had experienced patients with resistant bacteria. Thus, some of their judgements in daily practice acknowledge elements of such a scenario. In what follows, we demonstrate how such issues appear within "the informal arena" of jurisdictional claims, namely the workplace.

Making a diagnosis

For the purpose of analysing the significant activities included in judgements by GPs, we asked how they knew whether it was the right decision to prescribe antibiotics in a range of specific situations. Focusing on the manner in which a diagnosis was made, the GPs engaged in different practices to arrive at a final decision. Physical observations and listening to the patient's illness narrative seemed to be part and parcel of all consultations: practices that are evident and necessary, but not always sufficient. Observations included considering symptoms and warning signs, in particular, high fever, and also sometimes examining the throat and, with a stereoscope, the lungs. Most of the GPs told us that they regularly use or previously have used or intend to use so-called rapid tests, in particular, urine tests and CRP (C-Reactive Protein, a blood test marker for inflammation), to indicate whether a patient is suffering from a virus or a bacterial infection. In general, only the latter should imply antibiotic prescribing. All the GPs also regularly used laboratory tests to inform themselves more specifically about which bacteria are present. However, as some of them said, lab tests take more time, often at least 24 hours, and the results might not indicate whether the bacteria present are the reason for the patient's feeling bad.

Moreover, grey zones often feature where a diagnosis is not easily affirmed, and it is difficult to acquire knowledge about what is at issue, a bacterial infection or a virus, or maybe "something in-between." Most of the GPs noted that timing can play

a role if the consultation takes place on a Friday, just before the weekend, or before holidays. Many doctors expressed worries about leaving their patients to out-of-hours services, not only because some GPs find these services less safe, but also because the treatments become more expensive, not for patients themselves but rather from the perspective of overall health economics. From all accounts, it appeared that the nature of the GPs' advice indeed depended on for whom they were considering prescribing antibiotics. In particular, the interviewees were less reluctant to prescribe antibiotics when confronted with patients experiencing complex issues such as comorbidity and those with specific weaknesses, for example, elderly people, babies, formerly hospitalized patients, or patients who have problems caring for themselves, perhaps because of certain types of disabilities. Some of the GPs mentioned that COPD (Chronic Obstructive Pulmonary Disease) patients were more likely to get a prescription if there was the slightest indication of bacterial infection. Likewise, the worry expressed by parents of small children could influence some GPs' decisions. Sometimes it is hard to determine where a baby feels pain, and a thorough examination might be difficult and time-consuming to conduct.

One experienced GP said that if he had taken the decision to prescribe antibiotics and was relatively sure it was the right decision, then he would never use tests: "These will only add doubts to your decision" (GP1). Many GPs mentioned that the tests can be used as indicators but will not always yield a precise measure, and often they indicate a grey zone. Sometimes a rapid test can be used as a "pedagogical tool," a term suggested by GP3 to cover activities useful for convincing a patient. Some of the GPs, in particular, those dealing with quite a few highly educated patients, found that more and more patients had themselves become sceptical about antibiotic treatments and preferred to find other solutions or just to wait and see.

"Wait-and-see-prescriptions," suggested in DSAM's newest guidelines (2014), were used by several of the interviewees to give to patients or parents they considered capable of monitoring their own or their kids' health condition. That way the recipients could get antibiotics without consulting the GP again if the condition worsened. Such prescriptions were used when it was hard to make a clear diagnosis, when GPs were busy in their practice, when a prescription seemed to calm down patients who were worried or sceptical, or when a weekend or holiday was approaching. Some of the GPs were not willing to suggest possible treatments about which the patients themselves had to decide; others were not familiar with this concept of "wait-and-see" or termed it otherwise, in particular, if they had used this strategy for years. The interviewees with experience of wait-and-see-prescriptions said that they only used them for certain kinds of patients. They had to know the patients very well, and some GPs underlined or indicated that often there is a social issue at play in such a decision. One of them said that she would never give a wait-and-see-prescription to certain patients, for example, to a worried mother from an ethnic minority that typically has experienced fever as harmful (because of greater mortality risk in less affluent countries):

> No, I won't ever do that because for sure the mother will use it immediately, so no, I won't ever do that again. I can do it for Danish parents, who often don't use the prescription anyway. In such cases, it's definitely a good idea. (GP2)

Although the "wait-and-see" concept is mentioned in the DSAM guidelines, only a few interviewees, when asked, said that they had noticed it. This brings us to the next theme, which will focus on issues other than those recommended by guidelines.

Beyond guidelines

The accounts demonstrated significant differences between everyday general practice with its random human problems and the specialists' and guidelines' more nar-

row focus on specific disease types. The issue of grey zones has illustrated this already. As in Armstrong and Ogden's study (2006, p. 958), many of the GPs in our study complained about "the sheer volume of guidelines that were sent to GPs making it difficult to separate the wheat from the chaff." Whereas only a very few had noticed the recent guidelines about antibiotic prescribing that were developed and forwarded by their own scientific society, DSAM, all were aware of the guidelines distributed by the Danish Health Authority (SST). However, in general, they considered them literally as guidelines, that is, they felt free to disregard them without finding reasons necessarily to change their usual practices.

One of the GPs who knew of the version by DSAM referred to discussions among peers and noted that the two respective guideline recommendations "clash." She explained that the SST's guidelines require measurement of the fluid pressure in children with otitis—a requirement that she found impossible to meet in daily general practice. The SST's guidelines are notable for being developed by experts other than GPs, she said.

> [o]ur guidelines are more and more created by people who aren't familiar with our daily situations … for example, by ear-nose-throat specialists who have a professional focus on a selected subpopulation of children with ear disorders. (GP5)

Another interviewee (GP3) who also had read the guidelines from DSAM noted that they are all too long and complicated and not very "pedagogical" if they are designed to reach GPs with busy everyday practice. Informal meetings and talks with GP scholars have confirmed this impression. Some of the GPs emphasized that they preferred the SST's short editions of guidelines. Also, posters and brochures distributed by the SST to hand out to patients or hang up in practices were appreciated by several interviewees.

Although it might not concern guidelines in general, a prevalent attitude among the interviewees was that updated versions of guidelines for antibiotic prescriptions were treated with a fair degree of scepticism. Their experience has demonstrated that there is rarely just one way of handling the same diagnosis. Clinical treatment may involve many special situations. Guidelines for a specific diagnosis or for the use of a certain treatment might not help patients with comorbidity who need special attention, several interviewees emphasized. Many situations giving rise to doubt were described when doctors handle patients with viruses or bacterial infections; for example, when the test results were ambiguous or incongruent with the GP's physical observations and assessment, which also was based on the patient's illness narrative and career of diseases. GP3 said that she usually did not want to override standardized treatments but told us anyway about several incidents where she did. One of the incidents involved a family with a father who had received a negative test result and did not seem to be suffering from bacteria that antibiotics could help. He got them anyway:

> [t]hey were on their way to spend their holiday in Turkey. First and foremost, it's hard to have half your holiday ruined if you suddenly develop a fever and need to find out how to get to a doctor in Turkey. And the risk was high that he would get five different kinds of broad-spectrum antibiotics if he consulted a Turkish doctor. So I believed it was better for me to prescribe some narrow-spectrum agents than what he would get down there.

In this case, the dilemma was explained by considerations about the availability and proper use of antibiotics. Other dilemmas were concentrated on using antibiotics for prevention of serious illnesses. Some of the GPs told us about bad experiences they had endured as an explanation for prescribing antibiotics for safety reasons:

> The first patient I saw today got antibiotics…. He wasn't terribly sick ... that is, he wasn't suffering from a high fever and wasn't that bad. When I take such a decision and choose to prescribe antibiotics, I do it in light of what's happened before…. Last time that he was sick, he was hospitalized, so therefore I didn't have the courage not to prescribe antibiotics. I could have performed a blood test to support my decision, but I don't think I would have changed my mind because he isn't very resilient and he's 78 years old. (GP1)

GP1 added: "you lower the bar when you have had bad experiences." Another GP put it like this:

> You develop your own kind of safety net when you've had a bad experience. A bad experience is of higher importance than what ten randomized studies say. (GP3)

Low socioeconomic status of patients has been suggested as a cause of overprescription when GPs suspect poor health conditions and react with a concern for safety first (Kumar et al., 2003). The issue of antibiotic usage in clinical settings is about safety on various levels. GPs' experiences and dilemmas tell us that the reality of their practices is not simply a matter of making judgements and decisions. There are tensions between guidelines and clinical reality, and all the GPs interviewed said more or less explicitly that clinical autonomy is valued. In the section that follows, inspired by Armstrong and Ogden's work on the role of etiquette (2006), we will explore how clinical autonomy is shaped by specific "tacit measures" for maintaining autonomy.

Professional etiquette

By addressing different kinds of decisions, challenges, and dilemmas, all the interviewees gave the impression that they were protecting their own as well as their peers' clinical autonomy. Professional etiquette is understood as a constrained behaviour, wherein doctors respect clinical autonomy by not interfering with the clinical judgement of another. "Criticism of or comment on the practice of one doctor by another is proscribed by professional etiquette," as Armstrong and Ogden have noted (2006, p. 962). In a more formal understanding, professional etiquette concerns issues that are not included in guidelines and evidence-based medicine and are beyond medical knowledge. However, it ensures learning by one doctor from another without compromising the professional ideals of clinical autonomy (Armstrong & Ogden, 2006, p. 963). Nonetheless, we will demonstrate how some of the interviewees in our study, in line with Armstrong and Ogden's findings (2006, p. 963), expressed a "tension between valuing the collegiality of shared decision-making and the imperative of maintaining the proper place of clinical autonomy in spirit if not in word."

GPs in solo as well as in group practices acquire a partial knowledge of peers' treatment decisions, not only when doctors meet in peer groups, but also when selected GPs take over their peers' patients or when peers have treated some of theirs. This happens for one reason or another, for example, during holiday periods when the patient's regular GP is not available. Some of the GPs found that certain of their peers were too generous in prescribing antibiotics:

> Sometimes I think: "Why don't we … contact some of those [who prescribe too much]?" I don't think we're good at discussing things…. It's taboo to contact your colleagues about their prescribing habits…. It's simply too difficult for us to deal with … to criticize colleagues we don't know. (GP11)

Another GP found it difficult as well to criticize colleagues in the group practice:

> With one of my colleagues, I have a continuous dialogue about what to do in specific situations and, I think, congruent ways of assessing infections and prescribing antibiotics.… However, I could never comment on [another colleague's] practice [concerning overprescription]. (GP20)

Some GPs underlined that they themselves had learnt through this more indirect route of professional etiquette from seeing the outcomes of other doctors' clinical practice. Professional etiquette means that in a situation like that mentioned above, where one of GP1's patients was hospitalized, GP1 was not told by the hospital doctors that he should have prescribed antibiotics to treat the patient as safely as possible. GP1 told us how he had acquired some practical knowledge from situations handled by other doctors and had reflected deeply on this experience, resulting in the readjustment of his prescribing practice in such cases. The value of the etiquette is, as Armstrong and Ogden (2006, p. 964) have put it, that "new ways of treatment could be 'learnt' without jeopardizing the autonomy of individual doctors."

Three of the interviewees (GP1, GP11, GP20) also mentioned a more direct route for learning from other doctors when the regional health consultants presented them with some statistics on their prescribing practice compared with those for other practices. Clinical autonomy was for most of the GPs less about never revising their own practices than about avoiding peers and third parties controlling and directing what to do in specific situations. More tacit measures like clinical etiquette were acknowledged as important components of GPs' daily work.

AMR as an environment for general practice

As the findings have demonstrated, guidelines can be controversial among GPs because they purport to tell them how to conduct their work. This is also an issue about fearing that third parties will interfere and use guidelines to undermine long-standing professional autonomy and interests (Larsen, 2016). Guidelines are purposed to provide the scientific optimum backed up by the best available evidence, and they offer instructions on which diagnostic tests to order, as well as when to provide medical and other services of clinical practice. However, guidelines also set an agenda for jurisdictional activities (Abbott, 1988, p. 83; Timmermans & Kolker, 2004, p. 178). GPs' experiences with antibiotic prescribing in their daily practice indicate that the problem of AMR is translated into consultation and clinical practice. Almost all of the interviewees had experienced patients with resistant bacteria, and some of their judgements in daily practice included elements of a scenario in which they could lose one of their most important tools, namely the usage of antibiotics.

The dilemmas described by the GPs when they were in doubt about whether or not to prescribe antibiotics in a specific case were in many cases based on specific patients' individual conditions or previous negative clinical experiences of one kind or another. They talked about safety reasons on the level of the doctor-patient encounter rather than the global level of the AMR problem. However, it is striking that they described many of their experiences as dilemmas and not, for example, matters of discretion concentrated on the individual patient; the perception of dilemmas might indicate the influence of external forces, such as regulatory boundary activities involving national and international surveillances.

Some GPs found guidelines too long and complex and preferred shorter and easier ones, as well as fewer editions in a year, and by the same token explained how they sometimes encounter very complex situations and patients when assessing whether or not to prescribe antibiotics. Such reflections may indicate a defence of clinical autonomy. In any case, the GPs believed and argued that guidelines cannot cover all the complexities encountered in practice. What is important here is the

range of management choices and practices. In a sociological processual and ecological view, it could be added that "all the complexities" should not be analysed as an entity (see Abbott's reflections on the debate of realism and nominalism, 2005, p. 271), but as an ecology linked to other ecologies, for example, scientific, medical industrial, and political, all of which, like the clinical work with different patients, represent changing ecologies.

GPs often need to adopt a pragmatic form of rationality in which they demonstrate a flexible negotiation between many different situations and normative ends that remain clearly distinct from the measurement and rationality invoked in evidence-based medicine and laboratory studies. Such managing also interferes with and is interfered with by external forces, as most scholars within the sociology of professions would probably agree. However, there is a need for a theoretical apparatus to approach this problem. Abbott has contributed heuristic tools with his reconceptualization of the social world in terms of "linked ecologies" (2005), but how to expand this to transnational "worlds" remains to be further developed. In our empirical analysis, it did not become evident that "doctoring" involves also handling tasks related to global problems, which might imply modes of knowing and acting outside the doctor-patient encounter and clinical sphere. This could have something to do with the research design, but it might also indicate that "prevention of AMR" is not (yet) a jurisdictional claim at the level of the GPs' workplace.

Prevention of AMR as a work task is created by internal forces, for example, handling of resistant bacteria, as well as external forces, including political ecologies. Currently, it is being debated, in this study's material as well as elsewhere, which professions play the most important in claiming prevention of AMR as their work task, therein assuming blame and responsibility. Apparently, there is no rigorous interprofessional competition for undertaking the task of AMR prevention. The fact that the GPs' own society has developed guidelines to prevent AMR (DSAM, 2014) is, following Abbott (1988, p. 83), an important condition for achieving success in legal or public claims of jurisdiction. When our findings indicate that prevention of AMR is not fully integrated into GPs' turf as a contested work task, they might illustrate that "jurisdictional claims entail only secondarily an obligation to in fact accomplish the work claimed" (Abbott, 1988, p. 60). Nevertheless, the dilemmas experienced by GPs in clinical practice seem to become dilemmas exactly because prevention of AMR *is* considered by GPs as a work task and possibly is recognized not only as a political and public agenda but also as a professional one.

Conclusion and perspectives

Danish general practitioners have explained how daily work in their practice is far from simple and how all clinical incidences cannot be included in readable guidelines for usage of antibiotics. By describing a range of dilemmas they encountered when deciding to prescribe antibiotics—or not—the interviewees demonstrated through their experiences how different patients, situations, and guideline recommendations are negotiated in clinical practice by managing "non-medical issues." In their descriptions of daily work, GPs used the term "non-medical issues" to refer to routines, clinical expertise and experiences with their patients, and to explain dilemmas and decisions based more on contextual and social circumstances than molecular conditions—as well as on the fact that such conditions can be hard to assess. How professional areas of work are maintained in a manner that protects professional identity, linking professional etiquette with questions of autonomy and "tacit ways" of learning or confirming knowledge, is one way this article has addressed some of the social issues at stake for GPs as they handle the prescribing of antibiotics.

Findings from this study are helpful in pointing out how and why adhering to guideline recommendations in practice should not be studied as an isolated entity. Lack of adherence to certain recommendations might in some ways be related to

barriers that can be overcome or tailored interventions that can be developed as, for example, Lugtenberg et al. (2009) have suggested. However, what might appear as lack of adherence is within the workplace arena also about how jurisdiction works. This applies not least to daily practice, in which this article has demonstrated important components such as the following: shortage of time, bad and good experiences, heterogeneity of patient population, including weak patients with chronic and comorbid diseases, challenge of too many (new) guidelines, insufficient tests, professional discretion, professional identity, autonomy, and etiquette. First and foremost, daily practice and professional jurisdiction are considered according to the work task of handling antibiotics linked to "ecologies" such as other professions and scientific and political ecologies (Abbott, 2005).

When it comes to the prescription of antibiotics, standardized clinical practice is not only for the sake of the doctor or the patient but also for the sake of others—with respect to the global world and in the future. The statistics showing increasing numbers of antibiotic prescriptions and constantly increasing deaths owing to resistant bacteria tell us that we need further insights into what is happening within the informal arena: the workplace. Public health concerns about AMR have led to practices for reducing the growth of resistance by ending "inappropriate use." Nonetheless, GPs struggle with the possible contradictions contained in encouragement to value antibiotics yet also to avoid them. Indeed, AMR represents an issue of scientific complexity and conflicting interests. It is also an issue of uncertainty, in which risk perceptions of various actors are affected by different truth claims of what accounts for AMR. As sociologists and scholars within cognate social sciences, we should be careful not to focus blindly on the informal arena or the organizational level to the exclusion of other reasons. This is where Abbott's approach of linking ecologies is relevant and should be developed.

Our sampling strategy, although developed to collect varied interview material, does not ensure that our study has shown a significant range of variation. This study has been more concerned with obtaining reasonable grounds for the relevance of essential issues to the sociology of professions in order to discuss how prevention of AMR, addressed as a jurisdictional task, can contribute with insights into complexities, constraints and controversies in everyday general practice. It is hoped that the article has cast light on how a sociological focus on (barriers to) GPs' adherence to guideline recommendations in practice—that is, in their professional work—should be linked to other ecologies in a theoretically fruitful way. If so, further work towards contributing to the transnational sociology of profession will require capturing the dynamic interplay between local and transnational arenas of professional work and organization in relation to challenges of workforce boundaries such as the problem of antimicrobial resistance.

Acknowledgements

References

Abbott, A. (1988). *The system of professions: An essay on the division of expert labor.* Chicago: University of Chicago Press.

Abbott, A. (2005). Linked ecologies: States and universities as environments for professions. *Sociological Theory, 23*(3), 245–274. https://doi.org/10.1111/j.0735-2751.2005.00253.x

Armstrong, D., & Ogden, J. (2006). The role of etiquette and experimentation in explaining how doctors change behaviour: A qualitative study. *Sociology of Health & Illness, 28*(7), 951–968.
https://doi.org/10.1111/j.1467-9566.2006.00514.x

Bero, L. A., Grilli, R., Grimshaw, J. M., Harvey, E., Oxman, A. D., & Thomson, M. A. (1998). Getting research findings into practice: Closing the gap between research and practice—an overview of systematic reviews of interventions to promote the implementation of research findings. *British Medical Journal, 317*(7156), 465–468. https://doi.org/10.1136/bmj.317.7156.465

Brante, T. (2011). Professions as science-based occupations. *Professions & Professionalism, 1*(1), 4–20. https://doi.org/10.7577/pp.v1i1.147

Britten, N. (2001). Prescribing and the defence of clinical autonomy. *Sociology of Health & Illness, 23*(4), 478–496. https://doi.org/10.1111/1467-9566.00261

Castel, P. (2009). What's behind a guideline? Authority, competition and collaboration in the french oncology sector. *Social Studies of Science, 39*(5), 743–767. https://doi.org/10.1177/0306312709104435

Danish Integrated Antimicrobial Resistance Monitoring and Research Program (DANMAP). (2013). *DANMAP 2013—Use of antimicrobial agents and occurrence of antimicrobial resistance in bacteria from food animals, food and humans in Denmark* (The Danish Integrated Antimicrobial Resistance Monitoring and Research Program). Copenhagen: Statens Serum Institute, National Veterinary Institute, Technical University of Denmark, National Food Institute, Technical University of Denmark.

Danish Medical Society for General Practice (DSAM). (2014). *Klinisk vejledning for almen praksis: Luftvejsinfektioner—diagnose og behandling* [Clinical guidelines for general practice: Respiratory tract infections—diagnosis and treatment]. Copenhagen: Dansk Selskab for Almen Medicin.

European Commission (EC). (2012). *Council conclusions on the impact of antimicrobial resistance in the human health sector and in the veterinary sector: A "One Health" perspective.* Brussels: European Commission.

European Commission (EC). (2015). *Progress report on the Action plan against the rising threats from Antimicrobial Resistance*. Brussels: European Commission.

European Centre for Disease Prevention and Control (ECDC). (2013). *Antimicrobial resistance surveillance in Europe 2012* (Annual report of the European Antimicrobial Resistance Surveillance Network). Stockholm: European Centre for Disease Prevention and Control.

Evetts, J. (2011). Sociological analysis of professionalism: Past, present and future. *Comparative Sociology, 10*(1), 1–37.
https://doi.org/10.1163/156913310X522633

Faulconbridge, J., & Muzio, D. (2011). Professions in a globalizing world: Towards a transnational sociology of the professions. *International Sociology, 27*(1), 136–152. https://doi.org/10.1177/0268580911423059

Haines, A., & Jones, R. (1994). Implementing findings of research. *British Medical Journal, 308*, 1488–1492. https://doi.org/10.1136/bmj.308.6942.1488

Hemminki, E. (1975). Review of literature on the factors affecting drug prescribing. *Social Science & Medicine, 9*(2), 111–115.
https://doi.org/10.1016/0037-7856(75)90103-1

Kumar, S., Little, P. M., & Britten, N. (2003). Why do general practitioners prescribe antibiotics for sore throat? Grounded theory interview study. *British Medical Journal, 326*(7381), 138. https://doi.org/10.1136/bmj.326.7381.138

Kvale, S., & Brinkmann, S. (2009). *InterViews: Learning the craft of qualitative research interviewing.* London: Sage Publications.

Larsen, L. T. (2016). No third parties. the medical profession reclaims authority in doctor-patient relationships. *Professions & Professionalism, 6*(2), 1−14. https://doi.org/10.7577/pp.1622

Llor, C., & Bjerrum, L. (2014). Antimicrobial resistance: Risk associated with antibiotic overuse and initiatives to reduce the problem. *Therapeutic Advances in Drug Safety, 5*(6), 229−241. https://doi.org/10.1177/2042098614554919

Lugtenberg, M., Zegers-van Schaick, J. M., Westert, G. P., & Burgers, J. S. (2009). Why don't physicians adhere to guideline recommendations in practice? An analysis of barriers among Dutch general practitioners. *Implementation Science, 4*(54), 1−8. https://doi.org/10.1186/1748-5908-4-54

Oxman, A. D., Thomson, M. A., Davis, D. A., & Haynes, R. B. (1995). No magic bullets: a systematic review of 102 trials of interventions to improve professional practice. *Canadian Medical Association Journal, 153*, 1423−1431.

Pedersen, I. K., & Jepsen, K. S. (2018, in press). What is "good doctoring" when antibiotic resistance is a global threat? In C. S. Jensen, S. B. Nielsen & L. Fynbo (Eds.), *Risking antibiotic resistance—A collection of one-health studies focusing on the use of antibiotics and its social and health consequences* (Chapter 9). London: Palgrave Macmillan.

Seabrooke, L., & Tsingou, E. (2015). Professional emergence on transnational issues: Linked ecologies on demographic change. *Journal of Professions and Organization, 2*(1), 1−18. https://doi.org/10.1093/jpo/jou006

Spradley, J. P. (1979). *The ethnographic interview.* Orlando: Harcourt Brace Jovanovich College Publishers.

SST [Danish Health Authority]. (2012). *Vejledning om ordination af antibiotika* [Guidance on prescription of antibiotics]. Copenhagen: Sundhedsstyrelsen.

Stivers, T. (2007). *Prescribing under pressure: Parent-physician conversations and antibiotics.* Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195311150.001.0001

Tavory, I., & Timmermans, S. (2014). *Abductive analysis: Theorizing qualitative research.* Chicago: The University of Chicago Press. https://doi.org/10.7208/chicago/9780226180458.001.0001

Timmermans, S., & Kolker, E.S. (2004). Evidence-based medicine and the reconfiguration of medical knowledge. *Journal of Health and Social Behavior, 45*(Supplement), 177−193.

Washer, P., & Joffe, H. (2006). The "hospital superbug": Social representations of MRSA. *Social Science & Medicine, 63*(8), 2141−2152. https://doi.org/10.1016/j.socscimed.2006.05.018

Weiss, M., & Fitzpatrick, R. (1997). Challenges to medicine: The case of prescribing. *Sociology of Health & Illness, 19*(3), 297−327. https://doi.org/10.1111/j.1467-9566.1997.tb00021.x

WHO. (2014). *Antimicrobial resistance: 2014 Global Report on surveillance.* Geneva: World Health Organization.

Zuiderent-Jerak, T. (2009). Competition in the wild: Reconfiguring healthcare markets. *Social Studies of Science, 39*(5), 765−792. https://doi.org/10.1177/0306312709104433