Influence of Clinical Communication on Parents' Antibiotic Expectations for Children With Respiratory Tract Infections

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ABSTRACT

PURPOSE The purpose of this study was to understand clinicians' and parents' perceptions of communication within consultations for respiratory tract infections (RTI) in children and what influence clinician communication had on parents' understanding of antibiotic treatment.

METHODS We video recorded 60 primary care consultations for children aged 3 months to 12 years who presented with RTI and cough in 6 primary care practices in England. We then used purposive sampling to select 27 parents and 13 clinicians for semistructured video-elicitation interviews. The videos were used as prompts to investigate participants' understanding and views of communication within the consultations. We analyzed the interview data thematically.

RESULTS While clinicians commonly told parents that antibiotics are not effective against viruses, this did not have much impact on parents' beliefs about the need to consult or on their expectations concerning antibiotics. Parents believed that antibiotics were needed to treat more severe illnesses, a belief that was supported by the way clinicians accompanied viral diagnoses with problem-minimizing language and antibiotic prescriptions with more problem-oriented language. Antibiotic prescriptions tended to confirm parents' beliefs about what indicated illness severity, which often took into account the wider impact on a child's life. While parents understood antimicrobial resistance poorly, most held beliefs that supported reduced antibiotic prescribing. A minority attributed it to resource rationing, however.

CONCLUSIONS Clinician communication and prescribing behavior confirm parents' beliefs that antibiotics are needed to treat more severe illnesses. Interventions to reduce antibiotic expectations need to address communication within the consultation, prescribing behavior, and lay beliefs.

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INTRODUCTION

Antibiotic resistance presents a major strategic risk to health services; without effective antibiotics, mortality rates from infectious illness and surgery would increase markedly.[1] Around 80% of antibiotics are prescribed in primary care, most commonly for respiratory tract infections (RTI).[2] Despite a range of initiatives to reduce the use of antibiotics, antibiotic prescribing for coughs and colds (upper RTI) in the United Kingdom has been increasing gradually since 1999.[3] The use of antibiotics is an important driver of antibiotic resistance,[4,5] which has the potential to result in increasing mortality rates from infectious disease.[1]

Patient and parent expectation of antibiotic treatment has been identified as a driver of antibiotic prescribing by clinicians.[6-8] Numerous campaigns have attempted to increase public awareness of appropriate use of antibiotics, many aiming to communicate the message that most RTIs are caused by viruses and cannot be treated with antibiotics.[9] Greater public knowledge, however, does not necessarily lead to reduced consumption of antibiotics.[10]

The communication occurring within the consultation can influence the treatment decision both for and against antibiotic prescription.[11-13] Previous research has found that parents and clinicians can have different understandings of consultations. When parents bring a child with an RTI to a clinician, they are often ambivalent about antibiotic treatment but are seeking a medical evaluation and a view from the clinician about what treatment is needed.[14] During the consultation, parents assess the credibility of the diagnosis and sometimes find a viral diagnosis inadequate, often when they feel the clinician has not taken their concerns seriously or when they perceive the severity of the illness to be at odds with the diagnosis.[15] Clinicians may assume that most parents want antibiotics,[16] and while direct requests are rare, various parental communication behaviors are commonly interpreted by clinicians as indicating a desire for antibiotics.[17,18] No previous studies of RTI in children have interviewed parents and clinicians about their intentions and understandings with regard to directly observed (rather than reported) communication in the consultation.

To examine communication within those consultations, we undertook an innovative study that used video recordings of consultations in in-depth follow-up interviews with both the clinician and parent involved. In this paper we report findings based primarily on thematic analysis of the interviews undertaken to determine how clinician communication about antibiotics influences parent understanding and expectation of antibiotic treatment.

METHODS

We recruited 6 primary care practices in southwest England serving areas that range from deprived through affluent, according to the practice-level index of multiple deprivation (IMD) scores.[19] General practitioners (GPs) and prescribing nurses with a range of primary care experience were recruited, and a schedule of recruiting days was agreed with each practice. Sixty-seven parents of children aged 3 months to 12 years presenting with acute RTI and cough were invited to consent to their consultation being video recorded; 6 declined, and 1 withdrew after the consultation. (In some cases children were accompanied by a parent and a grandparent, although for convenience we will refer to them all as parents.) Children older than 5 years had the study explained to them and were asked for assent. All adults provided written consent.

We video recorded primary care consultations between May and December 2013. A digital video camera with a wide angle lens was positioned in the consulting room such that all participants (clinician, child, parent, and other family members) would be visible. The camera was positioned as discretely as possible at the start of the session and was covered with a cloth while not in use. One of the authors (C.C.) obtained written consent from parents in the waiting room and sent a message to the clinician to inform him or her when the next patient was to be included in the study. Clinicians would usually start the video recording before the parent and child entered the room and would stop the recording at the end of the consultation.

We conducted semistructured video elicitation interviews[20] with a purposeful sample of parents. Parents were sampled to capture maximum variation in terms of the level of deprivation of their home neighborhoods (measured as IMD of home postcode), age of parent and child, and treatment decisions (for example antibiotic or other medication prescribed or no prescription). We conducted separate video elicitation interviews with clinicians who participated in the same consultations as these parents. Interviews were arranged for the earliest possible date (for the participant) after the consultation; in practice this was 2 to 4 weeks later for parents and 2 to 12 weeks later for clinicians. With the use of video-supported recall, the interviews involved a mixture of "recall, reliving, and reflection."[20] Parents were more able to recall the encounter, while clinicians combined some recall of particular encounters with more reflection on their practice in general, as found in other studies using this method.[20] Author C.C. conducted the interviews, which lasted between 30 and 60 minutes. Parents and clinicians were shown the consultation video on a laptop and asked to describe their thought processes and feelings at key points. Interview topic guides (the Supplemental Appendix, available at http://www.annfammed.org/content/14/2/141/suppl/DC1) explored communication intentions, understanding, the beliefs that informed their communication or understanding, and views on effective communication. The topic guides were developed by the authors, informed by previous research. They were revised during data collection as new topics emerged and were tailored to particular consultations. Interviews with parents took place in their homes, and interviews with clinicians took place in their consulting rooms. This study was approved by the National Research Ethics Committee, Frenchay (ref. 13/SW/0008). A Patient and Public Involvement group of local parents advised on parent-facing study materials and on recruitment strategy; the group also reviewed and commented on the findings.

We conducted the analysis in parallel with the collection of data, and interviews continued until data saturation was reached.[21] The consultation videos and interview audio recordings were transcribed verbatim

and imported into NVivo10 (QSR International Pty Ltd) to aid data analysis. We used a thematic analysis approach.[22] One member of the research team (C.C.) examined the interview transcripts and corresponding consultation transcript and identified thematic codes, which were grounded primarily in the interview data. Since our aim was to examine views and perceptions of the communication, we used the interview transcripts as the primary data source, while the transcripts of the consultations enabled us to identify the actual form of words used in a consultation that led to a particular understanding. To enhance analysis and interpretation, author J.H. independently coded 10% of the interview transcripts purposefully selected by C.C. to represent a range of cases. The list of codes was then reviewed and discussed with the research team after completion of 42% of the interviews and again after completion of 80%. The team reached a consensus about the final list of themes.

RESULTS

In total, 70 parents, 74 children, and 19 clinicians took part in the 60 video recorded consultations. In 9 consultations more than 1 parent was present, and in 13 consultations, other children (siblings of the patient) were present. In 2 cases, 2 siblings had been brought to the same consultation for medical evaluation. Twenty-seven parents and 13 clinicians took part in the interviews. Parents involved in the video consultation varied in terms of the level of deprivation of their home neighborhoods, their education levels, their ethnicity, and the number of children they had; clinicians varied in terms of their role and level of experience. Cases were also purposefully selected to include different treatment outcomes (Table 1).

Three major themes were identified:

- The meaning of a viral diagnosis
- The meaning of treatment explanations
- Parents' perceptions and beliefs regarding antibiotic treatment

Quotes representing the major themes from the interviews, together with the corresponding dialog from the consultation, are presented in Supplemental Tables 1 and 2, available at http://www.annfammed.org/content/14/2/141/suppl/DC1. Three quotes that illustrate specific points are also included in the text below. All names are pseudonyms.

Meaning of a Viral Diagnosis

In identifying the illness as having a viral cause, clinicians intended to communicate more than just the diagnosis. They were trying to reassure (Supplemental Table 1: 1.1) and often minimized the health problem (Supplemental Table 1: 1.1, 1.2, 1.3). Clinicians sometimes tried to telegraph that they intended to recommend a treatment that didn't include antibiotics, either implicitly (Supplemental Table 1: 1.1) or more explicitly (Supplemental Table 1: 1.4).

Parents understood that a viral diagnosis implied that antibiotic treatment was not indicated (Supplemental Table 1: 1.3, 1.4), but whether parents were reassured depended on their perception of their child's illness and of the consultation. Where the diagnostic explanation aligned with parent expectations and their concerns were addressed (by the physical examination or explanation), parents were reassured:

> It was…what I was expecting really. I was just expecting him not to prescribe anything really or say anything. I just wanted to give him a check over and make sure there wasn't anything on top of that. (Extract from interview with Father No. 01, Supplemental Table 1: 1.1)

Where the diagnostic explanation did not align with their concerns, however, parents heard the viral

Table 1. Interview Sample

Characteristic	Number
Parents	
Home neighborhood index of multiple deprivation	
1 (most deprived)	7
2	6
3	5
4	6
5 (most affluent)	3
Ethnicity	
White British	17
Mixed	2
Asian	1
Black	6
Eastern European	1
Treatment decision	
Antibiotics	6
Other medication prescribed (inhaler, analgesic, cough medicine)	7
Home care advised	14
Clinicians	
Role	
General practitioner	9
Nurse prescriber	3
Physician assistant	1
Primary care experience	
<5 y	4
5-14 y	4
≥15 y	5
Consultations video recorded	
1-3	5
4-6	7
10	1

diagnosis as trivializing their child's illness (Supplemental Table 1: 1.2) or even as meaning the clinician was not going to do anything to help their child (Supplemental Table 1: 1.3).

Meaning of Treatment Explanations

Clinicians attempted to teach parents not to expect antibiotic treatment for coughs mainly by explaining that antibiotics do not treat viruses (Supplemental Table 1: 1.3). For parents, although this is a familiar message it had little impact on their perception of the illness or on the need for consultation (Supplemental Table 1: 1.4, 1.5):

> No, I wouldn't know what would need it [antibiotics] and what wouldn't really....I think I'd have to go back [if he had something similar in the future] because, you know, you can't see that it's an infection.…I don't feel confident to know… whether he would need [antibiotics] or not.…If he had a temperature, I wouldn't know if it was the same thing or not. (Extract from interview with Mother No. 51, Supplemental Table 1: 1.5)

> Trying to explain an otitis media compared to an ear infection, as opposed to an RTI, like when something would need antibiotics. Erm, I think it is a lot of information to take in and I'm never convinced that they actually understand what I'm saying. (Extract from interview with clinician No. 203 about interview with Mother No. 51, Supplemental Table 1: 1.5)

During the physical examination, clinicians often emphasized that the "chest" or "lungs" were "clear" or free of infection, presenting this as definite observable evidence that supported their conclusion that the illness was viral and no antibiotics were needed (Supplemental Table 1: 1.2, 1.3). In contrast, when antibiotics were prescribed, the prescription was justified by reference to problematic or potentially worsening symptoms (Supplemental Table 1: 1.5, 1.6, 1.7). This reinforced the parent's perception that antibiotics were used for more severe illness and that the physical examination differentiated between illnesses that did and didn't need antibiotics (Supplemental Table 1: 1.4, 1.5).

Antibiotic prescriptions also tended to confirm the parents' beliefs about what symptoms indicated the need for antibiotic treatment. When the explanation for an antibiotic prescription was not clear or specific, the parents felt this confirmed their beliefs about what indicated severity or need for antibiotics, including beliefs about sleep disruption (Supplemental Table 1: 1.6) and illness durations of a few days (Supplemental Table 1: 1.7). Clinicians sometimes justified an antibiotic prescription by the presence of a specific sign, including yellow phlegm (Supplemental Table 1: 1.6) or fever (Supplemental Table 1: 1.7), reinforcing parental beliefs that these symptoms warranted antibiotic treatment.

Parent's Perceptions and Beliefs Regarding Antibiotic Treatment

When parents expected antibiotic treatment, it was because they believed that antibiotics were used to treat more severe illness, not because they believed that antibiotics treated viruses (Supplemental Table 2: 2.1). The indicators used by parents to identify more severe illness included not just symptoms such as fever but also the degree of impact on the child's life, including sleep disruption and missed school (Supplemental Table 2: 2.2, 2.3). Parents were unsure about interpreting symptoms (Supplemental Table 2: 2.4) and sought a clinician's opinion:

> 'Cos you don't really know....Trouble is, you don't know what's normal. You don't know how fast he's supposed to breathe or.…But when you hear him kind of, um, breathing and he's all like chesty, you don't know what's going on. 'Cos obviously he sounded the same as what Aidan does [Aiden is a sibling who received antibiotics last week]. (Extract from interview with Mother No. 35, Supplemental Table 2: 2.4)

Even when parents had recently had a cough in a sibling diagnosed as viral, they consulted when another child developed a similar cough and were reassured by the clinician's examination of the chest and pronouncement that the lungs were clear, rather than by the viral diagnosis (Supplemental Table 1: 1.3). Parents were aware that the over-use of antibiotics was a problem (Supplemental Table 2: 2.5). Most parents believed that it was the individual who developed resistance to antibiotics, and many also believed antibiotics could hinder the development of a child's 'natural' immune response (Supplemental Table 2: 2.6). These beliefs supported a preference for treatment without antibiotics because parents believed it was better for their children to fight off infections themselves (Supplemental Table 2: 2.7). A minority of parents believed that clinicians were reluctant to prescribe antibiotics because of rationing of National Health Service (NHS) resources and believed that rationing might be affecting quality of care (Supplemental Table 2: 2.8, 2.9).

DISCUSSION

Although clinicians communicated the message that antibiotics do not treat viruses, this had little influence on parental beliefs about when antibiotics were needed. Public knowledge about antibiotic use has improved progressively over recent years, with the most recent survey in 2011 showing that 69% agreed

that antibiotics are not an effective treatment for viral infections, compared with 57% in 2003.[10,23] That knowledge, however, has not led to a change in people's expectations for antibiotic treatment for RTI.[23] Our research offers a possible explanation of this apparent contradiction. The parents in this study believed that antibiotics were needed to treat more severe illnesses, where severity was indicated by particular symptoms and the extent of disruption in their children's lives. Clinicians offered minimal explanations of the diagnostic decision, perhaps because of their desire for shorter consultations,[14] and used language that equated a viral diagnosis with less severe illness. If these exchanges are common to other conditions and other patients, they may explain why the public accepts that antibiotics do not treat viruses but have unchanged expectations of antibiotic treatment for particular symptoms or particularly disruptive illnesses.

Clinician communication and prescribing behavior within the consultation and parents' lay beliefs tend to influence each other in a way that could promote overprescription of antibiotics. Clinicians often use problem-minimizing language during consultations as part of a preemptive move to signal a viral diagnosis.[24,25] If this aligns with a parent's diagnostic expectations (ie, if the parent consulted expecting to be reassured that the illness was a virus rather than something more severe) then parents are relieved,[15] but it could also confirm their belief that antibiotics are used to treat more severe illness. As in previous studies, when antibiotics were prescribed, the prescribing decision was given and accepted as a unilateral pronouncement, with little explanation or discussion.[18,26] In addition, antibiotics were sometimes prescribed when current evidence indicates they were not needed, eg, for yellow phlegm,[27] a practice observed across many countries.[28]

In our study we see how the minimal explanation accompanying antibiotic prescriptions can confirm parents' beliefs about what indicates severity and a need for antibiotics. Most parents are seeking a medical evaluation and defer to the clinician for the treatment decision,[14] but when they perceive the illness to be more severe, they may have a higher expectation of antibiotic treatment. Perceived expectations of antibiotics can influence clinicians to prescribe,[29] which in turn may reinforce the beliefs that led to the expectation.

The lay belief that it is the body rather than bacteria that becomes resistant to antibiotics and that antibiotics inhibit the natural immune response has been reported by previous studies.[30-33] This is the first study, however, to describe the lay belief that antibiotics are being withheld due to resource rationing. Stories about overwhelming demand for NHS resources and controversies over NHS rationing policies are regularly covered in the media. Although the reasons for restricting antibiotic use are very different, our research may indicate that the public is drawing on NHS resource-rationing reports to explain the more cautious approach to antibiotic prescription. The implication is that patients are competing for a scarce resource and that only the cases with the most need will receive treatment. Further research is needed to understand how common this belief is and whether it has any impact on antibiotic prescribing.

Strengths and Limitations

This is the first time the method of video elicitation,[20] combining video recording of the interaction with interviews with participants, has been used to examine how within-consultation communication affects parents' beliefs. Previous studies have either examined communication within the consultation itself without asking participants what they were thinking[25,34-37] or interviewed participants without an accurate record of what was actually said within the consultation.[15,38] Participants in our study may have modified their behavior because they knew they were being video recorded, although both parents and clinicians assured us these consultations did not seem different to them. This study recruited parents from a wide range of neighborhoods, and although we deliberately included parents from a wide range of ethnicities (including families from the Black African and Eastern European communities), very few of Asian ethnicity were recruited. In 5 of the 6 practices, clinicians had no influence over which consultations were recorded, since parents were recruited by the researcher before being seen by the clinician. In 1 practice, all patients requesting same day appointments were triaged and, while clinician selection cannot be ruled out, these 10 consultations did not differ from the others in terms of treatment outcomes or communication behaviors observed. Clinicians with a range of different professional training and years of experience were recruited, although since participation in the study was based on an 'opt-in' choice, they may differ from clinicians who did not agree to be video recorded. The sample was drawn from a limited geographical area, and as with all qualitative studies, although we achieved data saturation, caution should be exercised in generalizing findings.

Implications

This study suggests that within-consultation communication aimed at reducing antibiotic expectations would be more effective if it acknowledged that viral illness can be severe (eg, in bronchiolitis or viral

pneumonia) and that bacterial infections can be self-limiting.[39] It also suggests that clearer explanations of the symptoms and signs of a child's illness that indicate when antibiotics are and are not warranted would help reduce misconceptions, as would reducing antibiotic prescribing that is not supported by the evidence (such as prescribing for yellow phlegm). Interventions to reduce antibiotic prescribing need to address within-consultation communication, prescribing behavior, and lay beliefs simultaneously to avoid having one undermine the other.

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Key words: antibiotics; child; parent; respiratory tract infections; communication; treatment

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Supplementary materials: Available at http://www.AnnFamMed.org/content/14/2/141/suppl/DC1/.

References

1. Davies SC. *Annual Report of the Chief Medical Officer 2011*. London, England: Department of Health, 2013.
2. Standing Medical Advisory Committee. *The Path of Least Resistance*. London, England: Standing Medical Advisory Committee Sub-Group on Antimicrobial Resistance, 1998.
3. Hawker JI, Smith S, Smith GE, et al. Trends in antibiotic prescribing in primary care for clinical syndromes subject to national recommendations to reduce antibiotic resistance, UK 1995-2011: analysis of a large database of primary care consultations. *J Antimicrob Chemother*. 2014;69(12):3423-3430.
4. Costelloe C, Metcalfe C, Lovering A, Mant D, Hay AD. Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systematic review and meta-analysis. *BMJ*. 2010; 340:c2096.
5. Rhee SM, Tsay R, Nelson DS, et al. Clostridium difficile in the Pediatric Population of Monroe County, New York. *J Ped Infect Diseases*. 2014;3(3):183-188.
6. Björnsdóttir I, Hansen EH. Intentions, strategies and uncertainty inherent in antibiotic prescribing. *Eur J Gen Pract*. 2002;8(1):18-24.
7. Little P, Dorward M, Warner G, Stephens K, Senior J, Moore M. Importance of patient pressure and perceived pressure and perceived medical need for investigations, referral, and prescribing in primary care: nested observational study. *BMJ*. 2004;328(7437):444.
8. Rose PW, Ziebland S, Harnden A, Mayon-White R, Mant D; Oxford Childhood Infection Study group (OXCIS). Why do general practitioners prescribe antibiotics for acute infective conjunctivitis in children? Qualitative interviews with GPs and a questionnaire survey of parents and teachers. *Fam Pract*. 2006;23(2):226-232.
9. Huttner B, Goossens H, Verheij T, Harbarth S; CHAMP consortium. Characteristics and outcomes of public campaigns aimed at improving the use of antibiotics in outpatients in high-income countries. *Lancet Infect Dis*. 2010;10(1):17-31.
10. McNulty CAM, Boyle P, Nichols T, Clappison P, Davey P. The public's attitudes to and compliance with antibiotics. *J Antimicrob Chemother*. 2007;60(Suppl 1):i63-i68.
11. Cabral C, Horwood J, Hay AD, Lucas PJ. How communication affects prescription decisions in consultations for acute illness in children: a systematic review and meta-ethnography. *BMC Fam Pract*. 2014;15(1):63.
12. Mangione-Smith R, Elliott MN, Stivers T, McDonald LL, Heritage J. Ruling out the need for antibiotics: are we sending the right message? *Arch Pediatr Adolesc Med*. 2006;160(9):945-952.
13. Mangione-Smith R, Zhou C, Robinson JD, Taylor JA, Elliott MN, Heritage J. Communication practices and antibiotic use for acute respiratory tract infections in children. *Ann Fam Med*. 2015;13(3):221-227.
14. Lucas PJ, Cabral C, Hay AD, Horwood J. A systematic review of parent and clinician views and perceptions that influence prescribing decisions in relation to acute childhood infections in primary care. *Scand J Prim Health Care*. 2015;33(1):11-20.
15. Cabral C, Ingram J, Hay AD, Horwood J; TARGET team. "They just say everything's a virus"—parent's judgment of the credibility of clinician communication in primary care consultations for respiratory tract infections in children: a qualitative study. *Patient Educ Couns*. 2014;95(2):248-253.
16. Mustafa M, Wood F, Butler CC, Elwyn G. Managing expectations of antibiotics for upper respiratory tract infections: a qualitative study. *Ann Fam Med*. 2014;12(1):29-36.
17. Scott JG, Cohen D, DiCicco-Bloom B, Orzano AJ, Jaen CR, Crabtree BF. Antibiotic use in acute respiratory infections and the ways patients pressure physicians for a prescription. [References]. *J Fam Pract*. 2001;50(10):853-858.
18. Stivers T. Participating in decisions about treatment: overt parent pressure for antibiotic medication in pediatric encounters. *Soc Sci Med*. 2002;54(7):1111-1130.
19. Lad M. *English Indices of Deprivation 2010*. London, England: Department for Communities and Local Government, 2010.
20. Henry SG, Fetters MD. Video elicitation interviews: a qualitative research method for investigating physician-patient interactions. *Ann Fam Med*. 2012;10(2):118-125.
21. Sandelowski M. Sample size in qualitative research. *Res Nurs Health*. 1995;18(2):179-183.
22. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77-101.
23. McNulty C, Joshi P, Butler CC, et al. Have the public's expectations for antibiotics for acute uncomplicated respiratory tract infections changed since the H1N1 influenza pandemic? A qualitative interview and quantitative questionnaire study. *BMJ Open*. 2012;2(2): e000674.
24. Heritage J, Stivers T. Online commentary in acute medical visits: a method of shaping patient expectations. *Soc Sci Med*. 1999; 49(11):1501-1517.
25. Rollnick S, Seale C, Rees M, Butler C, Kinnersley P, Anderson L. Inside the routine general practice consultation: an observational study of consultations for sore throats. *Fam Pract*. 2001;18(5): 506-510.
26. Ijäs-Kallio T, Ruusuvuori J, Peräkylä A. 'Unilateral' decision making and patient participation in primary care. *Commun Med*. 2011;8(2): 145-155.
27. Butler CC, Kelly MJ, Hood K, et al. Antibiotic prescribing for discoloured sputum in acute cough/lower respiratory tract infection. *Eur Respir J*. 2011;38(1):119-125.

28. Brookes-Howell L, Hood K, Cooper L, et al. Clinical influences on antibiotic prescribing decisions for lower respiratory tract infection: a nine country qualitative study of variation in care. *BMJ Open*. 2012;2.
29. Mangione-Smith R, McGlynn EA, Elliott MN, Krogstad P, Brook RH. The relationship between perceived parental expectations and pediatrician antimicrobial prescribing behavior. *Pediatrics*. 1999;103(4 Pt 1):711-718.
30. Brookes-Howell L, Elwyn G, Hood K, et al. 'The body gets used to them': patients' interpretations of antibiotic resistance and the implications for containment strategies. *J Gen Intern Med*. 2012; 27(7):766-772.
31. Brooks L, Shaw A, Sharp D, Hay AD. Towards a better understanding of patients' perspectives of antibiotic resistance and MRSA: a qualitative study. *Fam Pract*. 2008;25(5):341-348.
32. Hawkings NJ, Butler CC, Wood F. Antibiotics in the community: a typology of user behaviours. *Patient Educ Couns*. 2008;73(1): 146-152.
33. Hawkings NJ, Wood F, Butler CC. Public attitudes towards bacterial resistance: a qualitative study. *J Antimicrob Chemother*. 2007;59(6): 1155-1160.
34. Barry CA, Stevenson FA, Britten N, Barber N, Bradley CP. Giving voice to the lifeworld. More humane, more effective medical care? A qualitative study of doctor-patient communication in general practice. *Soc Sci Med*. 2001;53(4):487-505.
35. Butler CC, Rollnick S, Kinnersley P, Tapper-Jones L, Houston H. Communicating about expected course and re-consultation for respiratory tract infections in children: an exploratory study. *Br J Gen Pract*. 2004;54(504):536-538.
36. Cahill P, Papageorgiou A. Video analysis of communication in paediatric consultations in primary care. *Br J Gen Pract*. 2007;57(544): 866-871.
37. Elwyn G, Gwyn R, Edwards A, Grol R. Is 'shared decision-making' feasible in consultations for upper respiratory tract infections? Assessing the influence of antibiotic expectations using discourse analysis. *Health Expect*. 1999;2(2):105-117.
38. Ingram J, Cabral C, Hay AD, Lucas PJ, Horwood J; TARGET team. Parents' information needs, self-efficacy and influences on consulting for childhood respiratory tract infections: a qualitative study. *BMC Fam Pract*. 2013;14:106.
39. Butler CC, Hood K, Verheij T, et al. Variation in antibiotic prescribing and its impact on recovery in patients with acute cough in primary care: prospective study in 13 countries. *BMJ*. 2009;338:b2242.