A review of the Rome foundation working team report on communication skills and the Patient Provider Relationship (PPR)

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Over the past several decades, changes in health care have negatively impacted meaningful communication between the patient and provider and adversely affected their relationship. Facing increasing time pressures, physicians rely more on technology than face-to-face time gathering data to make clinical decisions. As a result, they find it more challenging to understand the illness context and fully address patient needs. Patients experience dissatisfaction and a diminution of their role in the care process. Recent evidence suggests that practical communication skills can improve the patient-provider relationship (PPR) and clinical outcomes, but these data are limited. We suggest that effective communication skills can improve the PPR and health outcomes and offer recommendations for how to achieve this, even under increased time pressure.

Key Words: *Communication skills; Functional gastrointestinal disorders; Patient care; Patient-centered care; Patient-provider relationship*

INTRODUCTION

Addressing the need to improve communication skills and the PPR

Our emerging health care faces a growing dilemma due to increased administrative pressures, growing dismissive attitudes toward patients, and time constraints. Today, physicians spend a fifth of the time in face-to-face communication during office visits compared to decades ago. As a result, they rely more on diagnostic studies enabled by increased reimbursements than on the medical interview and the physical examination. The time pressure related to administrative tasks involves fulfilling certification requirements and attending to the Electronic Health Record (EHR), resulting in a deteriorating Patient-Provider Relationship (PPR) [1]. This review summarizes the Rome Foundation Working Team Report on Communication Skills and the Patient Provider Relationship (PPR). We note herein the key elements of this comprehensive review [2].

The dilemma of increased administrative pressures and time restraints reduces attention to the needs of patients, and this is amplified in Western medicine due to the concept known as mind-body dualism [3]. Patients presenting with structurally based diseases are considered to have valid symptoms and related suffering. In contrast, those with non-structural (functional) illnesses such as the disorders of gut-brain interaction (DGBI) are considered less legitimate or seen as having a psychiatric or unexplained disorder [4]. This common misunderstanding yields frustration when physicians try to understand, diagnose, and treat a condition unidentified by tests, which can have negative attributions communicated toward their patients. Yet even with structurally based diseases, there is a poor correlation between structural findings and symptoms [5].

Two decades ago, the Institute of Medicine (IOM) of the National Academy of Sciences raised concerns about a "chasm" between the patient and provider within American health care because of poor communication and doctor-centered care [2]. The IOM sought to change this by promoting patient-centered care, which they defined as: "Providing care that is respectful of, and responsive to, individual patient preferences, needs and values, and ensuring that patient values guide all clinical decisions"[2,5]. The IOM publication's exposure was limited, and only a few articles have addressed this issue within gastroenterology [2,6-10]. Furthermore, the growing influence of third-party payers' reimbursement schedules toward procedures over face to face care has drastically hindered the adoption of these recommendations.

SYSTEMATIC REVIEW SUPPORTS VALUE OF COMMUNICATION SKILLS AND PPR

Our systematic review of the literature on patient-provider communication involved 73 randomized controlled trials and controlled observational studies. We examined whether interpersonal interventions could improve the patient and provider experience, reduce costs, and improve the provider connection with patients [11,12]. We identified 26 new eligible studies. We concluded:

- Interventions focused on improving interactions between patients with their providers can improve population health, the patient experience, the provider experience, and lower costs.
- Several studies examining the effect of the intervention on costs demonstrated savings, and many studies showed no significant increase in costs.
- General communication skills training and precise communication techniques were the most common interventions and led to improved communication, satisfaction, and perceived provider friendliness when assessed by the patient.
- Using the Delphi process [11-14], the information was summarized and yielded five recommended practices to foster meaningful connections with patients:

1. Preparation with intent before seeing the patient
2. Listening intently and entirely while sitting down
3. Formulating an agreed agenda with the patient as to what matters most
4. Connecting with the patient's story and
5. Exploring emotional cues by naming and validating the patient's feelings.

The following summarizes the key aspect of the benefits and challenges of effective communication on the patient-provider relationship.

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Sociocultural factors influence the quality of the clinical interaction

Cultural influences can affect patients' reporting and interpretation and how they function in and experience the healthcare system [15]. When providers come from different cultural backgrounds than their patients, miscommunication can lead to relationship difficulties and adverse health outcomes. When patients have complaints that appear to be vague or potentially embarrassing, as can often occur in DGBI, the risk for miscommunication increases. Miscommunication between doctors and patients can be verbal and non-verbal and often relate to language, greeting style, proxemics, physical contact, eye contact, gender, or sexuality. Additionally, there can be cultural and religious implications to a male doctor examining a female patient and vice versa, the interpretation of the explained cause of symptoms, the attitude towards authority, the involvement of family members, and the communication of bad news, such as a diagnosis of cancer [16].

With the increase in the migration of the immigrant population, the number of multicultural clinics and hospitals has also increased, raising the risk of miscommunication when the patients are not fluent in the local providers' language. In 2015, that more than 25.9 million people in the U.S. had limited English proficiency, accounting for 9 percent of the overall population aged five and older [17]. Professional medical interpreters (rather than medical translators) and trained medical staff can work to help reduce miscommunication in medical clinics. However, family members, friends, non-trained staff serving as a translator are not recommended because of the potential for errors due to personal agendas, providing unsolicited advice, loss of confidentiality, and lack of familiarity with medical terminology [18]. To successfully navigate the healthcare system, patients need to be health literate and be able to communicate their needs effectively. When individuals in cultural subgroups do not have this skill, adverse health outcomes can be significant [19].

Gender, age and chronic illness need to be considered to optimize the PPR

Multiple factors can influence the PPR. These include age, gender, race, and cultural differences, and earlier traumatic experiences relevant to the medical illness, but often difficult to share. Data is limited on the role of race and ethnicity in the patient-provider relationship and additional research on this topic is needed.

Gender and diagnosis: Gender can influence the PPR, diagnosis, and management. For women, gender stereotyping often leads to the belief among physicians that emotional issues rather than physical causes are responsible for their presenting symptoms, even when diagnostic tests demonstrate a physical cause. Gender stereotyping can also affect men. While women with IBS are at risk for being belittled, men with IBS are at risk of being unnoticed or undiagnosed because IBS is considered to be a "female health concern" [20].

Chronic illness: Chronic illness can frequently impair a patient's ability to work, perform basic personal tasks, or even interact with others. With IBS, men and women's concerns about bowel habits can impact dating, intimacy, and sexuality, increasing isolation. However, women are more vulnerable to becoming unnecessarily self-critical and often feel frustrated, angry, and socially isolated when dealing with pain or chronic illness [5,21]. This leads patients to feel stigmatized by family, friends, and co-workers and retreat even more. When providers characterize the DGBIs in a stigmatizing fashion, the negative impact on the patient is amplified. If patients understand the diagnosis from a dualistic perspective, they may develop feelings of guilt and self-blame for having a condition not perceived as "real." This sense of isolation and stigma increases the stress patients feel as they attempt to manage these illnesses independently [3-6].

Gender of provider: In the USA, women utilize general and preventive healthcare services at a greater rate than men [22]. In general, patients report higher satisfaction levels when seeing female providers [23]. Female providers offer more preventive services and psychosocial counseling, while male providers spend more time on technical practice behaviors, e.g.,

history and physical examination. A systematic review showed that female physicians tend to conduct longer visits, use a more patient-centered approach, are more likely to discuss emotional issues while actively seeking the patient's input [24]. Therefore, patients may prefer female providers when addressing sensitive concerns. This is particularly important when seeking gynecological, gastroenterological, or psychological care. Nevertheless, physicians of both genders benefit from communication skills training to improve patient satisfaction.

Age: The age of the patient and the healthcare provider can affect the PPR. Older patients (e.g. >65 years) are more likely to interact with their physicians in a more patient-centered interaction [25]. Younger patients may be more familiar with technology and prefer medical information communicated digitally rather than in person. Although younger women may slightly choose a female provider, older women may select male providers, possibly due to an implicit bias that male physicians are more competent [26] Additional studies examining the effect of the provider's age on the PPR are needed.

Understanding and reconciling explanatory models of illness leads to collaboration

Many factors can contribute to patient-provider satisfaction, and they all benefit from effective communication techniques, which improve clinical outcomes. A significant component of successful communication involves understanding the patient's explanatory model of illness: their interpretation of symptoms, their causal attributions, and their expectations from treatment, and reconciling it with the provider's understanding from the evident data. The patient's explanatory model of illness [27] must be reconciled with the physician's knowledge to address the basis for unexplained symptoms and chronic conditions that don't fit into a clear diagnostic category [28].

Patients develop explanatory models even before seeing the physician. They include cultural background and personality, early learning, available sources of information, and other psychosocial factors. Providers should encourage patients to elaborate on their explanatory model to understand the patient's perspective [27]. This information can provide a window into the patient's beliefs, concerns, anxieties, and expectations from the healthcare process [29]. Knowing this information can help the physician frame the diagnostic and treatment plan to optimize care. However, physicians must be aware of their explanatory models of illness, which may differ from the patient's, which may be based on the biomedical model as commonly taught in medical schools. The most accepted model to achieve reconciliation is the Biopsychosocial Model, which integrates the biological and the psychosocial factors for illness and disease [5,30,31].

Listed below are key elements that providers should remember when working with patients.

Remember that patients experience symptoms not diagnoses: Patients go providers with symptoms, not diagnoses [32]. The provider makes sense of these symptoms and complaints within the medical diagnosis framework. However, a significant percentage of patients who consult with providers in primary care or specialist clinics have symptoms that remain unexplained after the diagnostic process is exhausted [33]. This can lead to increased health care utilization, frustration, and additional stress for the patient left without a diagnosis or treatment plan.

Patients frequently have diagnoses without a structural cause: The DGBI examples where there are no structural findings to explain symptoms. As a result, patients may be stigmatized to have a "psychological" or "psychosomatic" origin [3] Patients may hear counterproductive statements such as: "there's nothing wrong with you," or "there's nothing we can do about it." This sends an implicit message to the patient that the symptoms are "all in your head". Additionally, communicating negative test results may be insufficient reassurance and even perceived as dismissive if the message is: "don't worry – everything is normal" [34]. The effectiveness of diagnostic testing in reassuring patients with persistent symptoms is overestimated and often short-lived [33,34]. Instead, explanatory discussions appear more practical and are more desired by patients [32,35]. Use of the Rome

Foundation's symptom-based classification to diagnose gastrointestinal conditions without structural findings legitimizes them [36].

Patient expectations for immediate relief: Even after years of some patients maintain an explanatory model of having an acute rather than a chronic illness. They expect a rapid diagnosis and a quick cure, which can lead to dissatisfaction with symptomatic treatments, frequent clinical appointments and a high rate of emergency room visits. Patients may place high expectations with a new provider and may express dissatisfaction with previous health care experiences, "I hope you will help where others have failed" The provider's responses should be to validate the patient's frustration, communicate shared responsibility and set realistic goals in the care plan.

External challenges impede optimization of the patient-provider relationship

Finally, we highlight the external challenges that providers must work with related to health care system restraints; restrictions by third party payers, and the increasing use of the electronic health record related other digital health platforms.

Health care system constraints reduce time spent with patients: Having adequate time with a patient is essential for quality medical care. Yet across primary care and specialties, clinicians spend increasing time with the Electronic Health Record (EHR) instead of direct patient interaction. Face-to-face time with patients dropped from 55% to 27%, while EHR time tripled to about 50%. During a 15-minute clinical visit, over 40% of the time is spent on EHR and administrative tasks and growing administrative tasks (including spending 1-2 hours a day after hours responding to patient messages) diminishes job satisfaction and contributes to high burnout rates (Figure 1) [37,38].
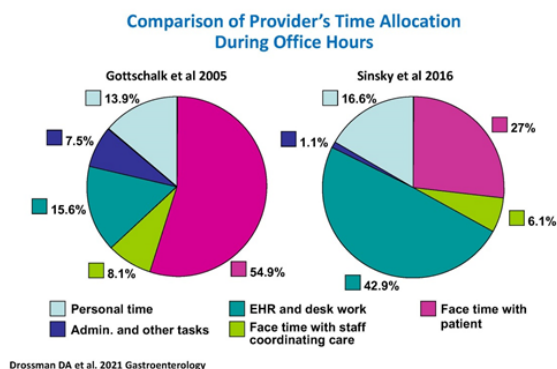
Figure 1) *The increase of administrative tasks and the electronic health record has caused face time with patients to decrease. A review of the evidence and recommendations on communication skills and the patient-provider relationship: A Rome foundation working team, image used with permission*

The EHR evolved to promote quality, safety, and efficiency, reduce health disparities, engage patients and families, improve care coordination, and maintain patient health information privacy and security [39] However, they also have their disadvantages concerning the PPR. To date, there are at least twenty different EHR systems nationally and even more systems internationally [40,41].

Benefits of using the EHR: The primary purpose is to facilitate and enhance patient care. The EHR has advantages by improving communication between HCPs and allowing clinicians to have full access to all patient care documentation [2].

Ease of provider to provider communication: Providers can easily communicate with each other via email "in-basket" messages to collaborate regarding patient care. Additionally, some systems allow limited access to view results and notes from providers outside the healthcare system, which can aid in the continuity of care.

Ease of patient to provider communication: The ability to access a patient's chart through the EHR fosters open and timely patient-provider communication. Mobile apps allow the provider to send messages and test results directly to the patient and patients can schedule office visits, pay medical bills, and request medication refills. This ease of access allows patients to feel connected and less anxious about their health and provides a safe space to ask questions about sensitive topics. However, patients can have unrealistic expectations that there is adequate time to review copious records and documentation before a patient visit.

Research opportunities: EHRs can also facilitate clinical research, improving the patient's ability to participate in care. Patients who contribute to clinical research may feel achievement, empowerment, and personal investment, fostering improved communication and clinical outcomes [42,43].

Limitations of using EHR: The EHR's limitations interfere with effective communication by creating an unnecessary physical barrier between providers and their patients. Even when optimally positioned, physicians must divide their attention between computer screens and patients, limiting available time for direct eye contact, limiting nonverbal cues and clinical observation, and disrupting the patients' abilities to foster a therapeutic relationship.

Insurance reimbursement rates adversely influence time with patients: Unfortunately, current insurance reimbursement rates adversely influence the length of clinical encounters in the USA, as do healthcare administrators who typically encourage high daily patient volume to increase revenue [44,42] Although the reimbursement structure favors procedure-based patient care, what clinicians provide in caring for patients with chronic illnesses such as DGBI cannot be easily captured by a coding system despite changes to Evaluation and Management (E/M) coding and billing guidelines in 2021. In particular, psychosocial aspects of health and building trust are harder to assign a code/value to and take longer to address 44. We recommend continuing to advocate for improving reimbursement from insurance companies for health education, non-procedural follow-up visits and treatment counseling by the provider in the clinic visit which ultimately saves money through reduced health care utilization rates at emergency rooms.

Our additional recommendations for how to reduce these health care system restraints are listed in Table 1.

TABLE 1

Additional recommendations for how to reduce these healthcare system restraints

Suggested action	Intended benefit
Train providers in communication skills	To optimize the PPR, and improve satisfaction, treatment adherence and clinical outcome
Train providers in how to use the electronic health record	To reduce provider time spent documenting and charting on the computer
Lobby insurance companies, to increase reimbursement for time spent during an office visit	To incentivize patient education, focus on the PPR, and reduce provider burnout
Develop a unified software system to allow providers to communicate with patients and with each other	To reduce the time spent on tasks that do not benefit the PPR directly
Reassign pre-charting and data entry tasks to medical assistants	To reduce provider time spent on secretarial tasks and equip the provider with valuable information about a patient before the encounter
Employ scribes or dictation software	To reduce provider time spent in front of a computer, allowing the provider's focus to shift back to the patient
Optimize the arrangement of office space	To create a collaborative environment where the patient feels they can ask

	questions and provide meaningful input on treatment plans

Summary of our recommendations to improve the patient provider relationship

We acknowledge that many challenges can impede a provider's ability to effectively communicate with a patient, negatively impacting the PPR and clinical outcomes. Yet, because of these challenges, studies continue to show the many benefits of training providers in medical school, residency, and fellowship on overcoming these challenges and implementing effective communication techniques in their clinical encounters. Providers trained in communication techniques and who utilize them in their patient care achieves greater satisfaction in their work and report improved patient outcomes. We advocate that all providers spend time learning to implement specific communication skills listed here and utilize the recommendations for overcoming health system constraints (Table 2) [45].

TABLE 2

Recommendations for optimizing the PPR

Recommendations for optimizing the PPR	
Listen actively	Listen without interrupting, focus on what is said and construct questions based on what you have heard
Understand the patient's agenda	Several questions can elicit the patient's agenda: a) What brought you here today? b) What do you think you have, c) What worries, or concerns do you have? d) What do you feel I can do for you?
Empathize	Empathy involves a) seeing the patient's perspective, b) being non-judgmental, c) understanding the patient's feelings and d) communicating that understanding. An empathic statement is "I can understand how difficult it is to manage your pain."
Validate	Validation means you understand the patient's perspective, but you may not necessarily agree. A validating statement would be "I can see you are frustrated when people say this is due to stress and you know it's real."
Set realistic goals	Chronic illness means symptom management, not cure "I understand how much you want these symptoms to go away, but you've had them for years. If we can reduce your symptoms by 30% over the next several months, would that help?"
Educate	Education is an iterative process a) Identify what the patient understands, b) address any misunderstandings, c) Offer information consistent with the patient's frame of reference, and d) check the patient's understanding
Reassure	Reassurance is provided based on the available data and not prematurely. This involves a) identify the patient's concerns, b) validate them, and c) respond to the specific concerns
Negotiate	Patient-centered care is a partnership. The physician offers choices, and the patient makes a choice. For example, the physician can suggest treatments "A" and "B," indicating the possible benefits and side effects.
Encourage patient responsibility	With chronic illness, the clinical outcome is better when the patient takes responsibility for care. Rather than say, "How is your pain"? one can say "How are you managing with your pain"?
Be there	One can't always anticipate what will come up in the clinical visit; providing support and a listening ear is indispensable.

CONCLUSION

Our working team found that applying the skills summarized can improve both patient and provider satisfaction, reduce provider burnout and improve clinical outcomes. Our team also found that application of effective communication skills, even with the impediments of the current health care system, does not increase provider burden and actually can help providers and patients improve their relationship, which can be therapeutic for patients and increase providers' ability to connect and establish trust. Our team recommends that skills-based communication training in medical and healthcare professional schools be established and include cross-cultural competencies as well as collaborative modeling of clinical experience be required. In addition, we recommend that additional studies be conducted to study the outcome of these trainings on satisfaction, adherence, outcome, quality of life and health care utilization costs.

REFERENCES

1. Drossman DA, Chang L, Deutsch JK, et al. A Review of the Evidence and Recommendations on Communication Skills and the Patient-Provider Relationship (PPR): A Rome Foundation Working Team Report. Gastroenterol. 2021.

2. Drossman DA, Ruddy J. Improving Patient-Provider Relationships to Improve Health Care. Clin Gastroenterol Hepatol. 2020;18(7):1417-1426.

3. Feingold JH, Drossman DA. Deconstructing stigma as a barrier to treating DGBI: Lessons for clinicians. Neurogastroenterol Motil. 2021;33(2):e14080.

4. Drossman DA. 2012 David Sun lecture: Helping your patient by helping yourself-how to improve the patient–physician relationship by optimizing communication skills. Official Am J Gastroenterol. 2013;108(4):521-528.

5. Drossman DA, Ruddy J. Gut Feelings: Disorders of Gut-Brain Interaction and the Patient-Doctor Relationship. In: Drossman Center. 2020.

6. Drossman DA. Functional GI disorders: what's in a name. Gastroenterol. 2005;128(7):1771-1772.

7. Baker A. Crossing the quality chasm: A new health system for the 21st century. British Medical Journal Publishing Group. 2001.

8. Drossman DA, Ruddy J. Communication skills in disorders of gut-brain interaction. Neurogastroenterol LATAM Rev. 2019;2:1-14.

9. Ruddy J. From pretending to truly being ok: A journey from illness to health with postinfection irritable bowel syndrome: the patient's perspective. Gastroenterol. 2018;155:1666-1669.

10. Drossman DA. From pretending to truly being ok: A journey from illness to health with postinfection irritable bowel syndrome: the provider's perspective. J Gastroenterol. 2018;155:1664-1665.

11. Zulman DM, Haverfield MC, Shaw JG, et al. Practices to foster physician presence and connection with patients in the clinical encounter. JAMA. 2020;323:70-81.

12. Haverfield MC, Tierney A, Schwartz R, et al. Can patient-provider interpersonal interventions achieve the quadruple aim of healthcare? A systematic review. J Gen Intern Med. 2020;35:2107-2117.

13. Milholland AV, Wheeler SG, Heieck JJ. Medical assessment by a Delphi group opinion technic. N Engl J Med. 1973;288(24):1272-1275.

14. Torsoli A, Corazzari E. The WTRs, the Delphic Oracle and the Roman Conclaves. Gastroenterol int. 1991;4:44-45.

15. Department of Health and Human Services. National Standards for Culturally and Linguistically Appropriate Services (CLAS) in Health and Health Care: US Department of Health and Human Services, Office of Minority Health, 2001.

16. Carrillo JE, Green AR, Betancourt JR. Cross-cultural primary care: A patient-based approach. Ann Intern Med. 1999;130(10):829-834.

17. Batalova J, Zong J. Language diversity and English proficiency in the United States. Migration Information Source. 2016;11;11.

18. Juckett G, Unger K. Appropriate use of medical interpreters. Am Fam Physician. 2014;90(7):476-480.

19. Health literacy: Report of the Council on Scientific Affairs. Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, American Medical Association. JAMA. 1999;281(6):552-557.

20. Halpert A. Irritable bowel syndrome: Patient-provider interaction and patient education. J Clin Med. 2018;7(1):3.

21. Drossman DA, Chang L, Schneck S, et al. A focus group assessment of patient perspectives on irritable bowel syndrome and illness severity. Dig Dis Sci. 2009;54(7):1532-1541.

22. Vaidya V, Partha G, Karmakar M. Gender differences in utilization of preventive care services in the United States. J Womens Health. 2012;21(2):140-145.

23. Zandbelt LC, Smets EM, Oort FJ, et al. Satisfaction with the outpatient encounter: A comparison of patients' and physicians' views. J Gen Intern Med. 2004;19(11):1088-1095.

24. Roter DL, Hall JA, Aoki Y. Physician gender effects in medical communication: a meta-analytic review. JAMA. 2002;288(6):756-764.

25. Peck BM. Age-related differences in doctor-patient interaction and patient satisfaction. Curr Gerontol Geriatr Res. 2011;2011:137492.

26. Balayla J. Male physicians treating Female patients: issues, controversies and gynecology. Mcgill J Med. 2011;13(1):72.

27. Helman CG. Communication in primary care: The role of patient and practitioner explanatory models. Soc Sci Med. 1985;20:923-931.

28. Kleinman A. Patients and healers in the context of culture. CA: University of California Press, Berkeley, 1980.

29. Eisenberg L. Disease and illness distinctions between professional and popular ideas of sickness. Cult Med Psychiatry. 1977;1(1):9-23.

30. Drossman DA. Gastrointestinal illness and biopsychosocial model. Psychosom Med. 1998;60(3):258-267.

31. Engel GL. The need for a new medical model: A challenge for biomedicine. Science. 1977;196(4286):129-136.

32. Kroenke K. A practical and evidence-based approach to common symptoms: a narrative review. Ann Intern Med. 2014;161(8):579-586.

33. Sharpe M, Carson A. "Unexplained" somatic symptoms, functional syndromes, and somatization: do we need a paradigm shift? Ann Intern Med. 2001;134(9):926-930.

34. Salmon P. The potentially somatizing effect of clinical consultation. CNS Spectr. 2006;11(3):190-200.

35. Rolfe A, Burton C. Reassurance after diagnostic testing with a low pretest probability of serious disease: Systematic review and meta-analysis. JAMA Intern Med. 2013;173(6):407-416.

36. Drossman DA. Functional gastrointestinal disorders: History, pathophysiology, clinical features and Rome IV. J Gastroenterol. 2016;148:1262-1279.

37. Thun S, Halsteinli V, Lovseth L. A study of unreasonable illegitimate tasks, administrative tasks, and sickness presenteeism amongst Norwegian physicians: an everyday struggle? BMC Health Serv Res. 2018;18(1):1-9.

38. Sonnentag S, Lischetzke T. Illegitimate tasks reach into afterwork hours: A multilevel study. J Occup Health Psychol. 2018;23(2):248-261.

39. Congress US. HR 1: American recovery and reinvestment act of 2009. Washington, DC. 2009.

40. Certified Health IT Developers and Editions Reported by Ambulatory Primary Care Physicians, Medical and Surgical Specialists, Podiatrists, Optometrists, Dentists, and Chiropractors Participating in the Medicare EHR Incentive Program. Health IT Quick-Stat. The Office of the National Coordinator for Health Information Technology. 2017;30.

41. Sullivan T. Why EHR data interoperability is such a mess in 3 charts: Healthcare IT News, 2018.

42. van den Berg MJ, de Bakker DH, Westert GP, et al. Do list size and remuneration affect GPs' decisions about how they provide consultations? BMC Health Serv Res. 2009;9(1):39.

43. Cowie MR, Blomster JI, Curtis LH, et al. Electronic health records to facilitate clinical research. Clin Res Cardiol. 2017;106(1):1-9.

44. Mechanic D. The organization of medical practice and practice orientations among physicians in prepaid and nonprepaid primary care settings. Med Care. 1975;13:189-204.

45. Hutton C, Gunn J. Do longer consultations improve the management of psychological problems in general practice? A systematic literature review. BMC Health Serv Res 2007;7(1):1-5.