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# Family Physicians' Perceptions on How They Deliver Cost-Effective Care:

## A Qualitative Study From the Residency Research Network of Texas (RRNeT)

Richard A. Young, MD; Bryan Bayles, PhD; Terrell B. Benold, MD; Jason H. Hill; Kaparabonya A. Kumar, MD; Sandra Burge, PhD

**BACKGROUND AND OBJECTIVES:** The aim of our study was to deepen our understanding of the factors that may explain the observational literature that more primary care physicians in an area contribute to better population health outcomes and lower health care costs.

**METHODS:** This study used in-depth, qualitative interviewing of family physicians in both urban and rural, academic, and private practices. Interviews were initiated with a series of grand tour questions asking subjects to give examples and personal narratives demonstrating cost-effectiveness and cost inefficiencies in their own practices. An iterative open-coding approach was used to analyze transcripts to search for unifying themes and sub-themes until consensus among investigators was achieved.

**RESULTS:** Thirty-eight respondents gave examples of how their decision-making approaches resulted in improved patient outcomes and lower costs. Family physicians' cost-effective care was founded on two themes—characteristic attitudes and skills of the physicians themselves and a thorough knowledge of the whole patient. Family physicians also felt their approaches to gathering information and then making diagnostic and treatment decisions resulted in fewer tests and fewer treatments ordered overall. Family physicians also delivered care in less expensive facilities and generated lower overall charges for physician fees.

**CONCLUSIONS:** Family physicians perceived that their approaches to patient care result in medical decision making priorities and care delivery processes that contribute to more cost-effective health care. These outcomes were achieved less by providing preventive services and strictly adhering to guidelines but rather by how they individualized the management of new symptoms and chronic conditions.

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rates overall, lower infant mortality, and lower death rates from heart disease, strokes, and cancer.<sup>2-4</sup> This association was especially strong for family physicians.<sup>4-7</sup> Other research has shown that health plans and states that increased primary care support experienced improved quality and lower costs.<sup>8-10</sup>

Starfield et al proposed six mechanisms, alone and in combination, that may account for the beneficial impact of primary care on population health: (1) greater access to needed services, (2) better quality of care, (3) a greater focus on prevention, (4) early management of health problems, (5) the cumulative effect of the main primary care delivery characteristics, and (6) the role of primary care in reducing unnecessary and potentially harmful specialist care.<sup>1</sup> There has been little systematic research to support these mechanisms. We used qualitative methods to shed light on the decision-making processes, attitudes, and specific behaviors that family physicians believe contribute to their overall cost-effectiveness.

A review by Starfield et al of the effect of physician supply on health care costs and outcomes concluded that regions with

more primary care physicians enjoyed better population health at a lower cost.<sup>1</sup> States with more primary care physicians had lower death

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## Methods

### *Interview Preparation*

Participants were family physicians at residencies affiliated with the Residency Research Network of Texas (RRNeT), which is a collaboration of 10 family medicine residency programs in nine cities in Texas that includes more than 100 practicing family physician faculty and 300 family medicine residents. Family physicians in private practice were also sought. The investigative team for this study consisted of three family physicians (RY, TB, and KK), and three social scientists (SB, JH, and BB, who is a medical anthropologist).

We sought narrative stories to illustrate ways that health care providers and/or patients save or generate unnecessary costs. While investigators expected family physicians would report their own good/efficient behavior, we also sought contradictory cases—for example, explicit instances where specialist physicians saved costs or primary care doctors were wasteful. Investigators followed the Spradley method of ethnographic interviewing and developed a series of “grand tour” questions and successive follow-up probes designed to elicit discussion of efficiencies and inefficiencies in primary and specialist care.<sup>11</sup> These questions were vetted with further discussion between the investigators that produced the final grand tour and follow-up probe questions. The grand tour questions are listed in Table 1.

### *Procedure*

After undergoing a 2-day training session in San Antonio, eight medical students went to eight of the 10 affiliated residencies to conduct the interviews.

RRNeT faculty representatives at each site contacted local family physicians to participate. Subjects were chosen to maximize variation in practice location, experience, and job responsibilities. Physicians were chosen from rural, urban, and suburban

**Table 1: Grand Tour Questions**

1. First, in your experience, how do specialists and primary care physicians differ with regard to their approaches, medical decision making, and patient care that have an impact on health care costs?
2. In your own practice (how you relate to patients, provide care, make medical decisions)—What approaches do you use that save money for your patient or for the health care system? a. Can you tell me a story—a specific example—of cost efficiency from your own practice? (more than one story is welcome!)
3. You have seen how medical specialists use the health care system to provide care for your patients (how specialists relate to patients, provide care, and make medical decisions)—How do their approaches affect costs? a. Can you tell me a story about a specialist's use of the health care system, or a patient's use of specialists, that is different than your practice—an example that has an impact on health care costs? (more than one story is welcome!)
4. Can you tell me a story about a time when your care of a patient was more costly than it needed to be? How often do you think this happens?
5. Can you tell me a story about a time when a specialist colleague provided cost-efficient (and high quality) care to your patient? How often do you think this happens?

practices, both private practice and academic physicians. Almost all the academic physicians cared for a panel of personal patients, and many had private practice experience prior to joining their faculty groups.

Students interviewed three to six physicians each and kept detailed field notes to record thoughts and impressions as they emerged from interviews and observed clinical behaviors. They collected basic demographic information from each respondent. Interviewees were not paid to participate. The interviews were audio-recorded, de-identified, and transcribed. The project was approved by the Institutional Review Board (IRB) at UTHSCSA and each of the participating residencies.

### *Data Analysis and Interpretation*

Investigators independently used an open-coding editing approach to the narratives with the intention of reducing and reassembling the information. Step 1 of the analysis involved reading the transcripts and notes and identifying the most salient and commonly occurring phrases relating to the study aim. Investigators made margin notes about the specific narrative content

and context. In Step 2, investigators independently identified major themes emerging from identified passages and notes. These processes started a few weeks into the study to look for emerging themes, make necessary modifications in the interview questions, and assure that the medical students were performing adequately. No major changes were made.

For Step 3, three investigators in San Antonio took the collected themes and organized them into an overall structure consisting of broad categories. All investigators re-read the transcripts and labeled text sections according to this coding framework. Investigators in San Antonio then checked the resulting coded passages to evaluate areas of agreement and dissent. A final rubric of themes and subthemes, together with passage categorizations, was created by the San Antonio investigators and vetted by the other investigators by a consensus approach, with textual examples identified and agreed upon for the major findings. Multiple rounds of emails, telephone conversations, and manuscript drafts were required to achieve final consensus.

## Results

Thirty-eight interviews were completed. Characteristics of the interviewed physicians are included in Table 2. Saturation of themes was reached by about the 30th interview, though all interview transcripts were included in the final analysis.

Family physicians' cost-effective care was founded on two themes—a characteristic set of attitudes and skills and a thorough knowledge of the whole patient. Family physicians also felt their approaches to gathering information and making diagnoses and treatment decisions including referrals resulted in fewer tests and fewer treatments ordered overall. Family physicians also delivered care in less expensive facilities and generated fewer charges for physician fees.

### Two Foundational Themes

**Characteristic Attitudes and Skills.** All subjects gave examples illustrating how they provided cost-effective care. A recurring theme was that costs to the patient and also the greater health care system were common considerations as the family physicians formulated diagnostic and treatment plans.

[My patient's] problems are compounded by her financial strain—she'll forego follow-up with the transplant team in another city and she'll ration out her insulin whenever she runs out of money. I

therefore try to keep things as simple and as inexpensive as I can for her, as I then also ask her to prioritize expenses for her own health.

An important cost-saving intervention of family physicians was to educate patients to care for themselves whenever feasible. An implied theme across interviews was that providing cost-effective care is an inherent value of family physicians.

When asked to give examples of how they provided cost-effective care, respondents stated that they were not providing substandard care as they considered the effects of costly care on their patients:

I never practice [with] the intention of saving money at the cost of my patient's health.

**Knowledge of the Whole Patient.** Family physicians viewed their knowledge of the whole patient obtained from continuous relationships with their patients as fundamental to their efficient decisions. This knowledge comprised their patients' previous medical history including their mental health and social circumstances, aspects of their patients' personal lives including financial situations, and past diagnostic and treatment experiences that were often not repeated by the family physicians. Read Story A in Table 3.

### Medical Decision Making Gather Information and Diagnose

**Importance of the History and Physical Examination.** Family physicians frequently gave examples where they diagnosed and treated patients based on histories and pertinent physical findings without ordering tests. One physician replied: "History taking. The patient knows the answer if you're willing to ask the questions."

**Ordering Tests.** Testing strategies commonly included ordering no tests initially or ordering only a few tests at the first presentation of symptoms. Further testing was ordered only if the initial round of testing did not reveal a cause when symptoms persisted. Family physicians attributed their ability to trust the history and physical exam to make initial treatment decisions to their comfort with uncertainty, ambiguity, and complexity. This was illustrated in stories of mild or vague symptoms where reassurance was given rather than immediate testing or referral. Low-risk patients received a less aggressive diagnostic approach.

I think that it's important to sort out [patients] into two groups. Those that are sick, that you have to figure out what's the matter with them in rather short order because it could be a life-threatening problem, and those that are not sick in the sense that they're likely to get better. I would say that for instance . . . we do far too many X rays . . . that are just unnecessary if people would be willing to wait for the progression of disease.

**Limits of Early Detection.** An implied theme was that family physicians felt, in many cases, that early detection of disease did not always improve the ultimate outcome. The long-term impact on the patient would be the same if a disease were detected later than the

**Table 2: Characteristics of Study Subjects\***

Age, mean (SD)	46.5 (13.7)
Men, # (%)	26 (68%)
Position, # (%)	
Family physician faculty	24 (63%)
Family physician in private practice	9 (24%)
Family physician resident	5 (13%)
Number of years in practice, mean (SD)	17.1 (14.9)
Use EMR in clinic	35 (92%)

\* n=38

SD—standard deviation

EMR—electronic medical record

first opportunity to make the diagnosis, such as after a symptom worsened. This belief was coupled with education provided to the patient explaining when worsening or new symptoms indicated a poor healing trajectory and also the most appropriate use of the health care system should they occur.

We have a lot of weekend warriors. They may come in with hurt knees and shoulders, and some people's instincts may be to automatically get an MRI on that. I'll explain to them, 'You know? Let's try some physical therapy first. If you're not feeling better after some physical therapy, then we'll consider getting this expensive imaging test.

Family physicians also justified not ordering tests in cases where the result was unlikely to change the diagnosis or impact treatment decisions:

Ordering a test or imaging that I'm not going to act on, it's wasteful.

**Managing Complexity.** Family physicians managed multiple organ systems and symptoms in the same visit, as well as combinations of acute and chronic conditions. Their ability to triage large amounts of data, enabled by an extensive knowledge of organic medicine, behavioral health, and health care systems, was a recurring theme. Subjects commonly believed the best care occurred when family physicians provided as much care as possible as opposed to coordinating a series of specialist visits.

A patient had been under the care of a doctor . . . who directed a team of nurses who saw the patient routinely. She was on 13 medications, four herbs/vitamins, and she made regular appointments with five specialists.... She has been under my care now for 3 years and no longer sees any specialists. She now is on seven medications plus a calcium and a vitamin D supplement.

Family physicians used their judgment of priorities as a starting point to negotiate with their patients the concerns that deserved the most time and effort.

We're going to deal with the most important things today. We'll deal with these other things at a later date and so let's prioritize. What's most important to you today?

Family physicians were flexible in their decision making and did not stick to rigid diagnostic or treatment strategies, which meant they did not always follow standard guidelines. This flexibility was heavily influenced by patient preferences, patient preexisting health states, costs to the patient, and costs to the greater health care system.

**Behavioral Causes.** Family physicians often concluded that symptoms were caused by behavioral factors and did not feel they had to rule out every rare organic cause of the symptoms to diagnose a behavioral condition or mental illness and then begin treatment. Read Story B in Table 3.

**Harms of Aggressive Care.** Family physicians' concerns about excessive costs were expressed in statements about the cost of aggressive testing and treatment and its effects on patients and their families. One concern was false positives in non-invasive tests that led to harm by invasive tests or procedures.

A patient had a CT scan of the chest. They found a lesion in the adrenal gland . . . It ended up being a benign adenoma, but in the process (surgery to biopsy the lesion) the patient developed an abdominal hernia, which is now going to require subsequent surgery and repair.

## Treat

**Generic Medications.** Family physicians frequently prescribed generic

medications to keep costs down while maintaining high quality care.

**End-of-Life Care.** Family physicians also reported being more comfortable with end-of-life care and supported palliative care as the best option for some patients. Family physicians viewed death as natural and not a personal defeat on the part of the physician or patient. Family physicians accepted limitations in their expectations for the overall health care system to fix all health-related problems. Read Story C in Table 3.

**Refer.** When family physicians felt the best patient care included the involvement of other physicians, they sought specialists who they perceived provided efficient care. The desired specialist traits included those who were flexible in their approach to patient care, stayed focused in their field, ran efficient office practices, and didn't refer patients to other specialists.

**Care Practicalities.** Subjects illustrated how other practicalities contributed to cost-effective care. Family physicians were comfortable treating some moderate-risk conditions in their clinics, which kept patients out of the ER or hospital.

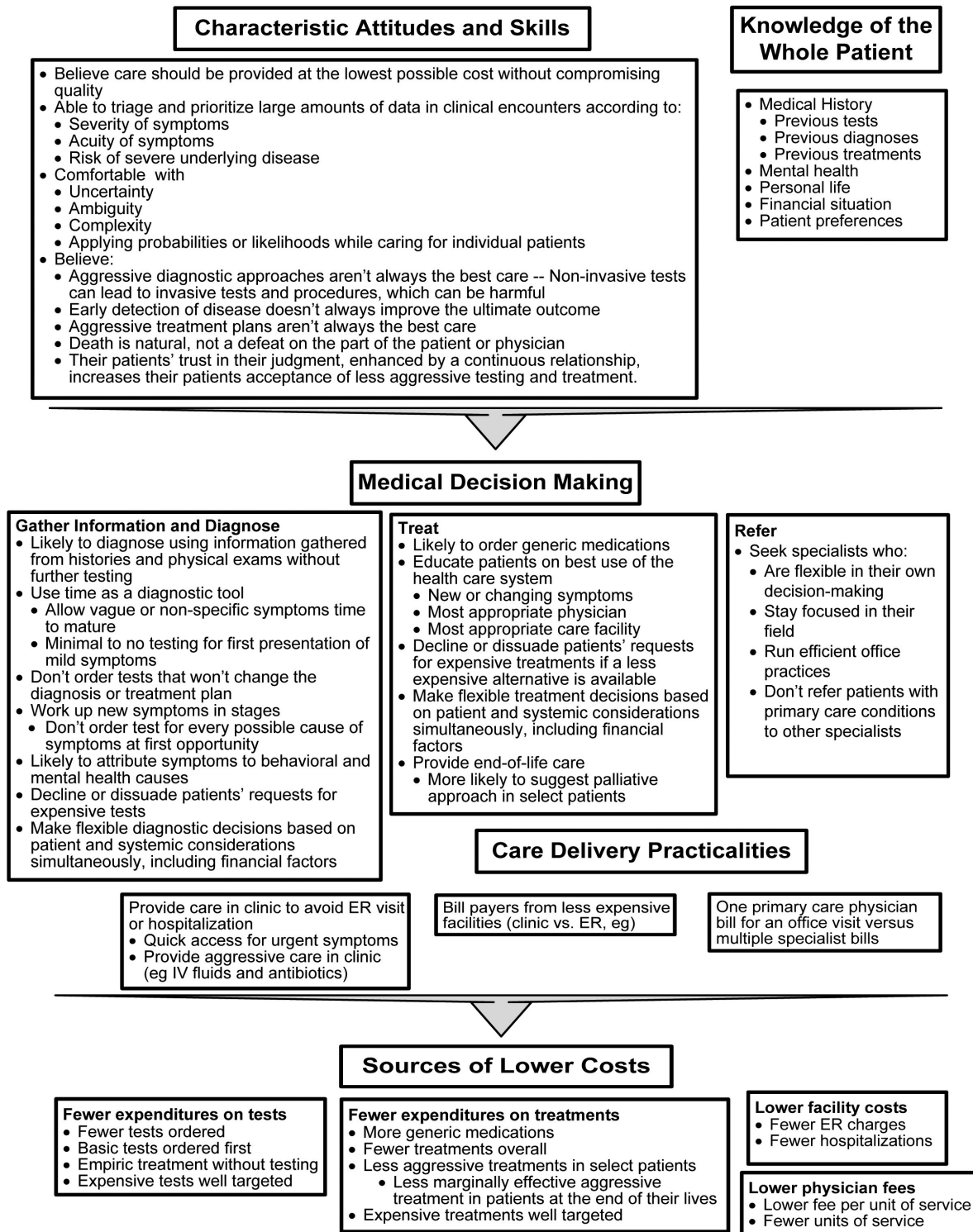
I had somebody come in 2 weeks ago with a DVT in the office. I started them on Coumadin right away. I think I saved that patient an extensive hospital stay.

Efforts to treat patients in the office could start with a phone call or email after usual clinic hours. This interaction often included the family physician educating the patient about the best use of, or options for, efficiently using the health care system.

A lot of times the patients will call me—I'll call 'em back at night and a lot of times, I can avoid the hospitalization just by talking to them and making sure that I can see them first thing in the morning. Most patients in my experience,



**Figure 1: Model of Themes Explaining How Family Physicians Provide Better Population Health at a Lower Cost Than Multi-Specialty Care**



they're happy to wait. They don't particularly want to go to the ER.

Other examples were given where family physicians provided aggressive care for acute illness in their

offices, such as administering IV fluids and medication, thereby reducing ER and hospital utilization. The fact that allowable charges for office visits are less than ER or urgent care visits was recognized as a practical

mechanism explaining lower costs in family physician offices.

A model of our emergent themes and how they explain the inherent cost-effective practices of family physicians is presented in Figure 1.

**Table 3: Patient Stories**

#### **Story A**

There's a girl who was in my office in this past week. She's 28 now, and I've known her since she was 8 years old. She came in because she's having this intermittent funny numbness [in] her foot. She didn't see me [for a while] because she had been going to her OB and she didn't think about it. She saw her OB at her post-partum checkup—fine, she went for a Pap smear at 6 months . . . she was just starting to have it and the OB said well maybe you should see an orthopedic surgeon. She went to see an orthopedic surgeon who took a look at it and said she had some disc bulging but not a true disc and that's about it. Couldn't come up with an explanation. It was getting worse to the point that now it was happening every day. She had an EMG, [it was] negative. So now she sees the neurologist who tells her he doesn't think it's her disc. She doesn't have any true physical symptoms of it and there was a little bulge on the [MRI] but not enough to be impinging on the nerves and he wants to do multiple tests to [look] for B12 deficiency, whether she's got syphilis, you name it, diabetes. He says well maybe you're getting diabetes, maybe you have multiple sclerosis but we can't find out now, but I don't know what's the matter with you. I don't want to see you anymore unless you have some new symptoms.

She calls our office crying, she's really upset. Her mother said why did you do all that? You should go see Dr [interview subject.] She comes in with her husband, and they're both freaked out. I examine her, there's no real definite numbness on her exam. It's totally normal except for the fact that she's obese and she's crying. Of course she's crying, she's got a 1 year old, and somebody told her she might have multiple sclerosis. She's terrified. The surgeons don't want to see her, the orthopedic doctor doesn't want to see her, and the neurology doctor doesn't want to see her. So I say to her, [patient] I think I know what the cause of your numbness is. She says what is it? I said you sit like this and you put your baby on your side and you bounce [your baby] all the time, and I bet you that's how come your foot's numb.

She's going to try it out for 10 days. Roughly a fortune could have been saved but the neurologist didn't realize she had a baby, never thought that she would sit like that. Now why do I know that? Because when she was 8 or 9 years old she used to sit like this all the time in the office or she would sit in the W position when she was watching TV and we had that talk at her well child visit—which I didn't remember at first that I had told her. But it must have been filed somewhere in the back of my head. (Authors' note: the symptoms resolved within 10 days.)

#### **Story B**

[A patient] sent out an email . . . asking if we could recommend a good endocrinologist. I asked her why, and she said she was dizzy at times and that her neurologist advised she see an endocrinologist after his evaluations were negative. I replied that neither specialist was really appropriate for a dizziness work-up. Then I sent her four different descriptions of what her "dizziness" might represent: pre-syncope, vertigo, ataxia, and lightheadedness.

Not surprisingly, she replied in her words, "Mine is (lightheadedness). I had to be taken to the ER from work one day, because I could not stand, nobody knows what it is. They did multiple tests, including X rays, where I almost fainted when they asked me to take a deep breath and hold it. I am tired of feeling the way I do, and nobody can tell me what it is. I was sent from cardiologist to neurologist to endocrinologist now..."

I explained to her that her lightheadedness was actually a symptom that many people experience and that fortunately there is not any organic disease state known to be associated with it. I also pointed out that it frequently arises during periods of stress. This small hint promptly elicited an outpouring of her recent stressors: caring for her elderly in-laws who had recently moved to town, taking her young son to doctors for treatment of a difficult problem, and working full-time while her husband was transitioning to a new job. She quit seeing doctors for her spells of lightheadedness, and she's fine now.

#### **Story C**

JD (who is 95 years old) has a terrible heart, cardiologist knows he's got a terrible heart but he doesn't know JD. That's why I practice medicine. And so I also know when it comes that JD can't go ahead and mow his yard and his back doesn't work anymore, when he gets really bad we're going to walk down that road with him and let him die very comfortably and take him to a little cemetery at the end of the road where his wife's buried and bury him. Because that's what we ought to be doing. Rather than doing all this other crap to people while they're just trying to die a comfortable death . . .

And that's why I think family medicine and primary care really works you know. I will protect JD from the cardiologist. He doesn't need heart surgery, doesn't need a cardiac cath, he doesn't need anything else, but I may need the cardiologist to tell me how can I tweak his medicines a little bit to keep him going. I'm telling [the cardiologist] exactly what I want to do..., hey help me out with this guy, but you can't do anything to him. We kind of have that kind of understanding.



### Family Medicine Inefficiencies.

Family physicians recognized inefficiencies could occur with their care approaches in patients whose symptoms were ultimately explained by rare or difficult-to-treat conditions and that a specialist might have made the diagnosis sooner.

The most common reaction by the family physicians was to struggle to find examples of how they independently added inefficiencies and costs to their patient care. They often responded by describing how they felt forced to practice inefficiently by pressures from patients and health care system factors such as patients demanding medications they saw advertised on television. However, patient trust of the family physician's judgment was felt to mitigate these requests.

They can have a headache, and they want to see a neurologist ASAP. If they have abdominal pain, they want a CT. This does not occur as much when we have developed a relationship with the patient, and they trust our opinion. If you do not really know them, they do not trust you and want every possible high dollar test done. ...I have unfortunately given in to this pressure more often than I would like.

### Discussion

This study captured family physicians' perceived characteristic attitudes and skills, knowledge of the whole patient, medical decision making differences and priorities, and care practicalities that lead to fewer tests, fewer treatments, lower physician fees, and lower facility costs that help explain why regions with more primary care physicians have better population health at a lower cost.<sup>1</sup>

Comparing our themes to the mechanisms proposed by Starfield et al, we found moderate concordance. Greater access to needed care was implied in a few stories. Adherence to strict quality measures or the rigid application of evidence-based

algorithms was infrequently or inconsistently reported. A more important principle was the flexible application of diagnostic and treatment approaches that were individualized based on unique patient characteristics, including social and financial issues.

Prevention was infrequently mentioned as a cost-effective theme except when the appropriate outpatient management of new symptoms or exacerbations of chronic diseases prevented ER visits and hospitalizations. A few respondents broadly mentioned standard preventive services such as cervical cancer screening, cholesterol testing and treating, and colon cancer screening as mechanisms of how family physicians save costs. However, the medical cost-effectiveness literature concludes that neither Pap smears,<sup>12</sup> treating high cholesterol with statins,<sup>13,14</sup> nor colon cancer screening<sup>15,16</sup> reduces overall health care costs. Therefore, these services do not explain the ability of family physicians to reduce overall health care costs.

Our study has shed significant light on the next Starfield mechanism of the cumulative effect of the main primary care delivery characteristics. Finally, the role of primary care in reducing unnecessary and potentially harmful specialist care was supported by our findings, and we have uncovered more details explaining this phenomenon.

Many of our findings are consistent with other studies on the characteristics of primary care, including the results of the FFM Project.<sup>17</sup> In this report, family physicians were recognized as being more comfortable with uncertainty than all other physicians. This theme was well supported by our findings. The humanistic element of family medicine was represented in multiple stories of family physicians taking the time to get to know their patients and explain the complexities of patient care and the best use of the health care system. Other studies have shown that a comprehensive knowledge of

the whole person mediated through long-term continuity of care is associated with lower health care costs.<sup>18</sup>

Previous research found family physicians use different diagnostic approaches than specialists such as allowing more time to elapse for patients with non-specific symptoms, which was reported here as well<sup>19</sup> and that primary care physicians were more likely to consider patients' health care costs in their medical decisions.<sup>20</sup> Our study supports these findings.

The ability of family physicians to process large amounts of information in a clinical visit and then prioritize that information into a logical diagnostic and treatment plan has been observed and is supported by our findings.<sup>21-24</sup>

### Limitations

Our study subjects were limited to family physicians in Texas, the majority from academia. This limitation was lessened because many of these physicians cared for their own panel of patients, and many had private practice experience prior to their academic jobs. Bias was further minimized because we interviewed urban, suburban, and rural family physicians and physicians with academic and private practice careers, though regional differences cannot be excluded.

Our study was limited in that we did not obtain the direct opinions of specialists on their habits, beliefs, and other patient care approaches. Our study was also limited because the primary interviewers were medical students who completed only 1 year of school and who received brief training on interview techniques.

### Future Research

Future research should further elaborate the core drivers of family medicine's inherent quality and cost-effectiveness. Instruments could be developed to deepen our understanding of the outcomes of family physicians' medical decision making approaches. For example, future

research should more closely examine the safety and effectiveness of using time as a diagnostic tool.

Future research should also quantify how often family physicians make diagnostic and treatment decisions different from specialists and how these decisions impact costs to the overall health care system. This should include eliciting the perspectives of the specialists through qualitative or quantitative means.

On a policy level, we hope this work leads to deeper discussions of family medicine's role in the American health care system. Having enough family physicians to care for all Americans may lead to better health at a lower cost if the family physicians' attributes, medical decision-making approaches, and care delivery are respected and rewarded by policy makers, regulators, payers, and most importantly our patients.

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