Variations Among Family Physicians' Management Strategies For Lower Urinary Tract Infection In Women: A Report From The Washington Family Physicians Collaborative Research Network

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Abstract: ***Background and Methods:*** **This study surveyed a random sample of Washington State family physicians regarding their attitudes toward and usual practices in providing care to women with lower urinary tract infection.**

Results: **Based on a 70 percent response rate, wide variations in diagnostic testing, treatment, and follow-up strategies were identified. For example, a patient vignette presenting an uncomplicated infection prompted 82 separate management strategies among the 137 replies. Attitude questions also showed wide variations in spite of stated physician confidence and comfort in evaluating and managing urinary tract infection. Associated estimated costs ranged from negligible to more than $250 per case.**

Conclusions: **These findings demonstrate significant physician variability in managing women's lower urinary tract infections. (J Am Board Fam Pract 1991; 4:327-30.)**

Interest in developing cost-effective clinical strategies has been growing. Provocative variations in frequency and cost have been documented for certain expensive surgical procedures, with the implication that standards of care, if they exist at all, must not be uniformly applied.[1] Generally missing from this research, however, has been attention paid to the more common problems seen in typical ambulatory practice. It is perhaps assumed that clinical standards for common outpatient problems are readily available and that, in any event, variations in practice are unlikely to generate large differences in the costs of care.

Women with complaints of dysuria, urinary frequency, and urgency are commonly seen by family physicians, and lower urinary tract infection consistently ranks among the most frequently seen problems, accounting for 2 to 5 percent of outpatient visits.[2,3] Although recent research has stimulated a critical look at long-standard diagnostic and management strategies for lower urinary tract infections in women, consensus has been difficult to achieve, and the dissemination of new approaches has been slow to occur. Further, even some of the most-cited research in genitourinary tract infection in family practice has failed to include relevant personal, psychological, family, and cultural factors in designing appropriate diagnostic and management strategies.[4]

The study presented here was designed to lay a descriptive groundwork for later research that would redefine a common clinical problem (women's lower urinary tract infections) and develop a cost-effective management strategy for it. This research examined the question: What variations exist in the diagnosis and management of lower urinary tract infections in women seen in typical family practices? The implications of observed variation on cost were an important but secondary goal of the project.

Methods

This study was conducted by the Washington Family Physicians Collaborative Research Network, a joint venture of the Department of Family Medicine at the University of Washington, Seattle, the Washington Academy of Family Phy-

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sicians (WAFP), and the Family Health Foundation of Washington. The network at the time numbered approximately 130 practitioners led by a steering committee of 18. The project was designed in two phases: (1) an initial ethnographic study of a small number of physicians, and (2) based on results from the first phase, a survey of a random sample of family physicians. The ideas for the study, literature review, interview schedule, and all drafts of the survey were generated and revised by the steering committee and were augmented by timely review and pilot testing by other members of the network.

Fifteen physicians were randomly chosen from the roster of approximately 1000 active members of the WAFP. None refused participation. The investigators conducted open-ended individual interviews with the physicians, eliciting their general approach to women with genitourinary tract complaints, use of diagnostic methods, and usual management strategies. The interviewers also probed for attitudes toward issues of costs and benefits, clinical outcome, and patient satisfaction. The interviews lasted 60 to 90 minutes and were recorded on tape and transcribed. Transcripts were analyzed for content to identify beliefs and practices held in common and other issues about which some controversy, disagreement, or variations existed.

Based on the analysis of the interviews, a survey instrument was developed and extensively pilot tested for content and clarity. The survey presented physicians with three clinical vignettes typical of ambulatory practice and elicited demographic, attitudinal, and skill characteristics of the physicians themselves. The sample size of 200 randomly selected members of the WAFP was chosen so that, adjusting for likely nonresponse, descriptive statistics generated from the survey would be estimates of true population characteristics within five percentage points.

Results

Results from the survey are presented here, incorporating the findings from the earlier interview phase that were used to develop the survey instrument. After follow-up mailings, 135 usable replies were returned for a response rate of 70 percent. Thus, the actual 95 percent confidence intervals around most of the estimates are plus or minus 4 percent.

Characteristics of Physicians Surveyed

The modal age was 39 years; 78 percent were men and 22 percent were women. The following locations were represented: rural (15 percent), small town (24 percent), suburban (31 percent), and urban practices (30 percent). Physicians saw an average of 24 patients per day, with one-half of their female patients older than 18 years. Most practiced in single-specialty or multi-specialty groups (64 percent), and prepaid plans accounted for 39 percent of patient visits. Physicians estimated treating an average of seven urinary tract infections in a typical week, and the total charge to the patient (including office visit and office or hospital laboratory fees) was $45.

Patient Vignettes

Respondents were presented with three clinical cases typical of those seen in primary medical care practice.

Patient 1 was a 30-year-old woman, established in the practice, who called the office complaining of a 1-day history of urinary urgency, dysuria, and blood in the urine. She had had two previous urinary tract infections and was not known to have any urinary tract abnormalities.

In slightly more than one-half of physicians surveyed (54 percent), the initial triage of the telephone call would result in a drop-in appointment the same day, and an additional 27 percent would tell her to drop off a urine specimen the same day, without an appointment. In a separate question, physicians were evenly split between those who would and those who would not prescribe medication over the telephone (46 percent and 49 percent, respectively). If the patient came to the office, a microscopic urinalysis was the most commonly ordered test (94 percent), with urine culture (57 percent) also frequently recommended. Other tests and cultures were much less frequently ordered (e.g., cultures for sexually transmitted disease were requested in approximately 2 percent). Physicians were unlikely to do a pelvic examination (9 percent) or evaluate for vaginitis (19 percent). There were 82 different treatment regimens recommended by the 137 respondents, representing nearly every possible permutation of antibiotic choice (trimethoprim-sulfamethoxazole, amoxicillin, sulfisoxazole, nitrofurantoin), dosage, treatment length (single dose, 3 days, 7 days, 10 days, 14 days), and use of

Table 1. Physician Attitudes and Beliefs.

		Percent Strongly Disagree-Disagree	Percent No Opinion	Percent Agree-Strongly Agree
1.	I usually tell patients about measures they can take to reduce their chances of their having a recurrence of their urinary tract infection	4	2	94
2.	Women are usually right when they say they have a bladder infection	7	16	77
3.	Women can significantly reduce the number of urinary tract infections they experience by changing their behavior, such as urinating more frequently, drinking more fluids, improving hygiene, etc.	12	23	65
4.	Women feel better psychologically when they take a multi-day course of drugs rather than a one-dose treatment	26	41	33
5.	A patient's insurance status has an effect on whether I'm likely to prescribe medication over the telephone	81	4	15
6.	Most office nurses can handle uncomplicated lower urinary tract infections as effectively I can	51	15	34
7.	Diagnosis and treatment of urinary tract infections could be done in a less costly way than is currently being done in most practices	16	30	54
8.	Most patients will return for a follow-up urinalysis or culture if I recommend it to them	18	7	75
9.	I am comfortable treating most urinary tract infections	0	1	99
10.	Urinary tract infections have a strong psychogenic component	85	11	4
11.	I rely on the results of laboratory tests rather than history and physical examination to diagnose urinary tract infections	47	12	41
12.	Most urinary tract infections can be diagnosed accurately	5	6	89
13.	I feel more comfortable ordering a multi-day course of treatment rather than a single-dose treatment for my patients with urinary tract infections	9	2	89
14.	Most young, sexually active women with urinary tract infections should be evaluated for sexually transmitted diseases	35	24	41

adjuncts (e.g., phenazopyridine, analgesics). Recommended follow-up included telephone callback if symptoms were not improved (77 percent) and repeat urinalysis (54 percent) or urine culture (21 percent). Approximately one-quarter (23 percent) recommended no specific follow-up.

Patient 2 was a 23-year-old sexually active woman who came to the office complaining only of dysuria, which had gradually increased over the last 2 weeks. She had no history of urinary tract infection. Recommended evaluations included urinalysis (93 percent), urine culture (47 percent), wet mounts (50 percent), gonorrhea culture (84 percent), and chlamydia culture or smear (50 percent). Most physicians would do a pelvic examination (81 percent) and evaluate for vaginitis (84 percent). Treatment regimens were not elicited because the diagnosis was not given, but most recommended follow-up by telephone (82 percent), and many recommended repeat urinalysis (37 percent), cultures (12 percent), or clinical reexamination (18 percent). Only 17 percent recommended that her male partner be seen by the physician.

Patient 3 was a 45-year-old woman who came to the office with frequent and painful urination and suprapubic pain. Her initial urinalysis and culture were negative. Recommended tests included wet mounts (82 percent) and gonorrhea and chlamydia cultures (48 percent and 61 percent, respectively). Almost all would do a pelvic examination (98 percent) and evaluate for vaginitis (96 percent). Follow-up by telephone (71 percent) and repeat examination (32 percent) were the most commonly recommended follow-up steps. Thirteen percent recommended that the patient's male partner also be seen by the physician.

Attitudes and Beliefs

Measurement of attitudes and beliefs was based on 14 Likert-type questions with five response options ranging from strongly agree to strongly disagree. Results from this section are shown in Table 1 and collapsed into three response categories: strongly agree or agree, no opinion, and disagree or strongly disagree. Findings of particular interest were that physicians credited patients with the ability to self-diagnose a bladder infection correctly (question 2), that insurance status had no effect on telephone prescribing (question 5), that physicians were split on whether an office nurse was able to handle the problem (question 6),

that physicians did not agree on whether urinary tract infections could be treated more cost-effectively (question 7), that most physicians did not think urinary tract infections have a psychogenic component (question 10), that most physicians were comfortable treating urinary tract infections and were sure of their diagnosis (questions 9 and 12), and that there was no consensus on whether young women should also be evaluated for sexually transmitted disease (question 14).

A few questions elicited diagnostic criteria for interpreting urinalysis and urine culture results. Most physicians examined urine sediment after centrifugation (90 percent), but there was considerable variation in what constituted a positive result, with some relying on white cell counts, others on bacteria. There was also variation in what constituted a positive urine culture: 48 percent required greater than 100,000 colonies, 31 percent more than 1000 colonies, and 11 percent more than 100 colonies.

Discussion

The main findings from this survey are that, although physicians see many women with urinary tract infections and claim a high degree of comfort with diagnosis and treatment, there is wide variation in diagnostic strategies and quite a remarkable variation in recommended treatment and follow-up. Moreover, these findings have obvious cost implications, although rigorous cost analysis was not a part of the study design. The least expensive strategy, treatment based upon a telephone conversation with the patient and then phoning in a prescription, costs little more than the price of the prescription. The most expensive strategy, an office visit with urinalysis, urine culture, and evaluation for sexually transmitted disease, with all of these repeated at a mandatory 2-week follow-up, would cost a minimum of $250 at the University of Washington Medical Center. Because reliable outcome indicators do not exist with either cost extreme, it is not clear whether implementing either would be more or less cost-effective.

This study is limited by the sampling frame (both location and numbers), by the response rate, and by whatever bias exists in the survey instrument itself. Whether survey results accurately reflect actual physician practice is unknown. Even so, the main finding of unexpected variability in diagnosis and management appears sufficiently robust to withstand all but the most extreme forms of bias, none of which is obviously in evidence.

Summary

This survey has reported much more variability than expected in the way practicing primary care physicians say they diagnose and manage uncomplicated urinary tract infection in women. The reported extremes present large potential cost differences that are impossible to evaluate without good outcome data. The situation is analogous to Wennberg and Gittelsohn's[5] study of variation in use of surgical procedures. In response to their work, better measures of outcome were developed. The same approach is needed to address common problems seen in ambulatory settings. This research has shown that developing better measures of outcome and cost for urinary tract infection might be a good place to start.

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