

Patients with urinary tract infection: proposed management strategies of general practitioners, microbiologists and urologists

FREDE OLESEN

IVAR OESTERGAARD

SUMMARY

Background. It is difficult to implement change in general practice. It is not known how best to conduct effective continuing medical education in general practice. General practitioners' criteria for good clinical practice vary and it is unknown whether systematic education by hospital specialists could be expected to reduce variation between general practitioners.

Aim. A study was undertaken to describe general practitioners', microbiologists' and urologists' strategies for diagnosis, treatment, and follow up of female patients with symptoms of urinary tract infection, a common reason for consultation in general practice. The findings of the study were to be used as a base upon which to discuss the advantages and disadvantages of using hospital specialists as a resource in general practitioners' peer group based continuing medical education.

Method. Three vignettes together with several proposals for diagnosis, treatment and follow up were presented in a questionnaire to general practitioners, microbiologists and urologists in Denmark. The case histories concerned three female patients (aged 10, 30 and 60 years) who consulted their general practitioner for advice. The female patients were otherwise healthy and well known to the practice. General practitioners', microbiologists' and urologists' recommendations for good clinical practice were compared.

Results. A total of 154 general practitioners (77%), 45 microbiologists (51%) and 54 urologists (61%) who were eligible for the study responded to the questionnaire. There was considerable variation in the management strategies proposed by doctors within each specialty and between the specialties. Microbiologists and urologists were more likely to suggest treating the 30-year-old woman by giving advice and a prescription by telephone compared with their general practitioner colleagues. Conversely, the microbiologists and urologists were more likely to suggest asking the 10- and 60-year-old patients to attend the clinic for examination compared with the general practitioners. The general practitioners reported asking the patients to return for follow up more commonly than the hospital specialists.

Conclusion. Large variation in suggested strategies for diagnosis, treatment and follow up was shown both within and between specialties. Continuing medical education of general practitioners based on small peer group discussions using hospital specialists as a group resource would not necessarily reduce variation in clinical practice between

general practitioners. A need for evidence-based rather than consensus-directed guidelines would be needed in order to reduce variation in clinical practice between doctors.

Keywords: continuing education; quality in general practice; informal protocols; urinary tract infection; diagnosis; management of disease.

Introduction

MOST doctors use implicit and explicit strategies (criteria) in their approach to managing common clinical symptoms. Knowledge of the doctors' criteria (intentions for care) is a necessary prerequisite for an observer to understand and evaluate standards of care (performance).^{1,2} Conventional continuing medical education may be insufficient for implementing change in general practice. Continuing medical education organized through small peer group discussion is known to be effective, especially if resourced by well-known and acknowledged opinion leaders; local specialists may fulfil this role when invited to the group as consultants.^{3,4} To be successful this method of continuing medical education requires specialists themselves to exercise less variation in clinical practice than general practitioners.

Symptoms of urinary tract infection are a common reason for consultation in general practice. The yearly incidence is estimated at 63 per 1000 women, with 2% of all prescriptions in general practice being for urinary tract infection (Dansk Lægemedelstatistik [Danish drug consumption statistics] 1.1.92–30.6.92, Copenhagen, Denmark).^{5,6}

The aim of the study was to describe general practitioners' management decisions for a common complaint — symptoms of urinary tract infection — and to compare these with management decisions reported by two groups of hospital specialists, microbiologists and urologists. The findings of the survey are used as a base upon which to discuss the advantages and disadvantages of using hospital specialists as a resource in general practitioners' peer group based continuing medical education.

Method

Doctor sample

To give acceptable confidence limits and to involve three doctor groups, a total sample of 200 general practitioners (6% of all 3300 general practitioners in Denmark) and 200 hospital specialists was required. The sample was drawn randomly from the computer register of the Danish doctors association, which also contains information on members of societies. The sample comprised 200 general practitioners, all 99 members of the Danish Society of Clinical Microbiology and 100 members of the Danish Society of Urology. The study was performed in 1993.

Vignettes

Doctors' management decisions concerning patients can be explored by vignette questionnaires.^{1,2} Specially constructed questionnaires were sent to the selected sample of doctors. The

F Olesen, PhD, MD, general practitioner and research director, Research Unit for General Practice, University of Aarhus, Denmark. I Oestergaard, MD, general practitioner lecturer and head of training scheme for general practitioners, University of Aarhus, Denmark. Submitted: 13 September 1994; accepted: 6 April 1995.

© British Journal of General Practice, 1995, 45, 611-613.

questionnaires presented three short vignettes, representing common consultation scenarios (Appendix 1). Special investigations into the aetiology of the urinary tract infection might be considered for the 10-year-old patient, while the 30-year-old patient represented a common, self-limiting condition. The 60-year-old woman represented a case for which the differential diagnosis of malignancy might be considered.

It was specified that the patients were well known to the general practitioner and had telephoned for advice. The general practitioners were asked to select their usual management strategy in each case, while the microbiologists and urologists were asked what advice they would give to the general practitioners if invited to advise on case management at a continuing medical education session. Participants were asked to state whether they would usually:

- Offer treatment based solely on the clinical history reported by the patient over the telephone, thus allowing treatment through telephone advice and prescribing by telephone;
- Ask the patient to send a urine sample to the clinic for investigation; or
- Request the patient to come for a clinical investigation bringing a urine sample.

Further questions were included relating to details of treatment and follow up. For example, if doctors indicated that they would request the patient to attend for a consultation, they were asked whether clinical examination should include pelvic examination. Doctors were invited to supplement their answers with free text, allowing additional explanations and suggestions.

Participation in the study was recommended by the general practitioners' committee for multicentre studies.

Statistical analysis was performed using the chi square test and confidence intervals were calculated according to rules for categorical data.

Results

A total of 22 doctors were excluded from the study. One general practitioner was excluded because he had stopped practising. Ten

microbiologists were excluded (four were not doctors and six were neither specialists nor were they training to be specialists in microbiology). Eleven urologists were excluded (six had retired and five were training for another specialty). Questionnaires were returned by 154 general practitioners (77%), 45 microbiologists (51%) and 54 urologists (61%) who were eligible for the study.

Diagnostic and treatment strategies

Doctors' proposed diagnostic and treatment strategies are shown in Table 1. Considerable variation was found between specialties and within each specialty. Microbiologists and urologists were more likely than general practitioners to suggest a telephone consultation for the 30-year-old patient ($\chi^2 = 33.3$, 1 degree of freedom (df), $P < 0.01$) and they were more likely than the general practitioners to recommend a consultation for the 10- and 60-year-old patients ($\chi^2 = 13.6$, 1 df, $P < 0.01$, and $\chi^2 = 4.3$, 1 df, $P < 0.05$, respectively). The microbiologists and urologists were less likely than the general practitioners to suggest performing a urine culture test for the 30-year-old patient, but if they performed the test, they were more likely to recommend drug sensitivity testing ($\chi^2 = 6.3$, 1 df, $P < 0.05$). Between 46% and 53% of the general practitioners recommending urine tests for culture and between 15% and 24% of the microbiologists and urologists suggested conventional microscopy rather than phase-contrast urine microscopy.

There was a high level of consensus between the three doctor groups on the choice of sulphamethoxazole. Other drugs chosen included mecillinam, ampicillin, nitrofurantoin or trimethoprim. Although not statistically significantly different, microbiologists and urologists were more likely to recommend single-dose treatments for all three patients than were general practitioners.

Follow-up strategies

The general practitioners suggested follow up more often than the microbiologists and urologists (Table 2). In the free text comments, the urologists suggested radiological and invasive follow-

Table 1. General practitioners', microbiologists' and urologists' reported diagnostic and treatment strategies in three cases of suspected urinary tract infection.^a

| Treatment strategy | % of doctors (95% CI) reporting diagnostic/treatment strategy for | | | | | | | | |
|---|---|----------------------------------|------------------------|-----------------------|----------------------------------|------------------------|-----------------------|----------------------------------|------------------------|
| | Patient aged 10 years | | | Patient aged 30 years | | | Patient aged 60 years | | |
| | GPs (n = 154) | Micro- biologists (n = 45) | Urologists (n = 54) | GPs (n = 154) | Micro- biologists (n = 45) | Urologists (n = 54) | GPs (n = 154) | Micro- biologists (n = 45) | Urologists (n = 54) |
| Advice and prescription by telephone | 2 (0 to 4) | 18 (6 to 28) | 6 (0 to 12) | 10 (5 to 14) | 47 (32 to 61) | 37 (26 to 53) | 1 (0 to 2) | 11 (2 to 20) | 4 (0 to 9) |
| Treatment after urine test | 42 (34 to 50) | 13 (3 to 23) | 26 (14 to 38) | 73 (66 to 80) | 36 (22 to 50) | 33 (21 to 46) | 43 (35 to 51) | 13 (3 to 23) | 13 (4 to 22) |
| Treatment after consultation and urine test | 56 (48 to 64) | 69 (55 to 82) | 69 (56 to 81) | 18 (12 to 24) | 18 (7 to 29) | 30 (17 to 42) | 56 (49 to 64) | 76 (63 to 88) | 83 (73 to 93) |
| Pelvic examination if consultation ^b | 0 | 0 | 0 | 26 (9 to 42) | 38 (4 to 74) | 50 (26 to 75) | 78 (69 to 87) | 88 (77 to 99) | 91 (83 to 99) |
| Urine test for culture | 70 (63 to 77) | 71 (58 to 84) | 69 (56 to 81) | 48 (40 to 56) | 24 (12 to 37) | 37 (26 to 53) | 62 (54 to 69) | 51 (37 to 66) | 65 (52 to 78) |
| Urine test for drug resistance ^c | 52 (42 to 61) | 72 (56 to 87) | 86 (75 to 98) | 50 (39 to 61) | 73 (46 to 99) | 80 (62 to 98) | 58 (48 to 68) | 74 (56 to 92) | 80 (68 to 93) |
| Sulphamethoxazole as first choice of drug treatment | 79 (73 to 86) | 80 (68 to 92) | 80 (69 to 90) | 94 (90 to 98) | 91 (83 to 99) | 91 (83 to 98) | 90 (86 to 95) | 82 (71 to 93) | 85 (76 to 95) |
| Prescription of single-dose treatment | 5 (2 to 9) | 16 (5 to 26) | 20 (10 to 31) | 12 (7 to 17) | 58 (43 to 72) | 39 (26 to 52) | 3 (0 to 6) | 33 (20 to 47) | 17 (7 to 27) |

n = number of doctors in group. CI = confidence interval. ^aDetails of vignettes are given in Appendix 1. ^bBaselines are of respondents indicating that they would invite patient for a consultation. ^cBaselines are of respondents indicating that they would undertake a urine test for culture.

Table 2. General practitioners', microbiologists' and urologists' reported follow-up strategies in three cases of suspected urinary tract infection.^a

| Treatment strategy | % of doctors (95% CI) reporting diagnostic/treatment strategy for | | | | | | | | |
|---|---|----------------------------------|------------------------|-----------------------|----------------------------------|------------------------|-----------------------|----------------------------------|------------------------|
| | Patient aged 10 years | | | Patient aged 30 years | | | Patient aged 60 years | | |
| | GPs (n = 154) | Micro- biologists (n = 45) | Urologists (n = 54) | GPs (n = 154) | Micro- biologists (n = 45) | Urologists (n = 54) | GPs (n = 154) | Micro- biologists (n = 45) | Urologists (n = 54) |
| No follow up | 0 | 2 (0 to 7) | 0 | 3 (0 to 8) | 7 (0 to 14) | 11 (3 to 19) | 1 (0 to 2) | 2 (0 to 7) | 4 (0 to 9) |
| Follow up if patient perceives symptoms | 8 (4 to 13) | 27 (14 to 40) | 28 (16 to 40) | 30 (23 to 37) | 69 (55 to 82) | 61 (48 to 74) | 19 (13 to 26) | 56 (41 to 70) | 39 (26 to 52) |
| Always recommend follow up | 92 (87 to 96) | 71 (58 to 84) | 72 (60 to 84) | 68 (60 to 75) | 24 (12 to 37) | 28 (16 to 40) | 80 (74 to 86) | 42 (28 to 56) | 57 (44 to 71) |

n = number of doctors in group. CI = confidence interval. ^aDetails of vignettes are given in Appendix 1.

up investigations more frequently than the general practitioners or microbiologists.

Discussion

The survey demonstrated considerable variation within and between the three groups of doctors as to their proposed diagnostic, treatment and follow-up strategies for the three patients with suspected urinary tract infection. This is consistent with the results of other studies.⁷ The high level of consensus between the three groups of doctors on treating suspected urinary tract infection with sulphamethoxazole may be the result of an intensive continuing medical education campaign conducted by microbiologists and general practitioners in Denmark in the late 1970s and early 1980s.⁸ This campaign stressed that sulphamethoxazole was usually sufficient (this recommendation may differ from recommendations in other countries).

The results should be interpreted with caution because the response rate, especially among the microbiologists and urologists, was low. It is likely that the microbiologist and urologist respondents would have been those most interested in becoming a continuing medical education consultant resource. It must be stressed that an analysis of treatment intention (criteria) is not the same as an analysis of the standard of treatment (performance).^{1,2} Nevertheless, the results are interesting because an understanding of the criteria is a precondition for understanding standards of care.^{1,2,9}

The results of the present survey reinforce the fear that small group based continuing medical education might lead to consolidation and consensus among participating doctors with respect to routine case management, rather than an adoption of an evidence-based management plan.^{4,9} This can be avoided when continuing medical education includes a thorough study of the literature, for example using valid meta-analyses or clinical guidelines.^{10,11} Such guidelines could ideally be developed, published and disseminated by participating professional societies and general practitioners. It is important, however, to warn decision makers against expecting published guidelines to change practice unless the use of guidelines is encouraged by a decisive implementation process.⁹

The present survey has shown that a reduction in variation in general practitioners' clinical practice cannot necessarily be expected if continuing medical education is based only on small groups with local hospital specialists acting as resources and opinion leaders. There is a need for evidence-based clinical guidelines.

Appendix 1. The three case histories presented to the general practitioners, microbiologists and urologists.

Participants were asked to select the standard treatment they would usually use/propose using in general practice when a healthy female patient, well known to the clinic, telephoned for advice.

The mother of an otherwise healthy 10-year-old girl claims that her daughter has had painful and frequent micturition for some days.

A 30-year-old married woman complains that for 24 hours she has been frequently voiding small amounts of urine, with accompanying pain. She has not previously had cystitis.

A 60-year-old previously healthy woman complains of 8–10 days' painful micturition and non-characteristic pressure in the bladder region.

References

- Marwick J, Grol R, Borgiel A. *Quality assurance for family doctors. Report of the quality assurance working party*. Victoria, Australia: World Organization of Family Doctors (WONCA), 1992.
- Lomas F. Teaching old (and not so old) docs new tricks: effective ways to implement research findings. In: Dunn EV, Norton PG, Stewart M, et al (eds). *Disseminating research/changing practice*. Thousand Oaks, CA: Sage, 1994.
- Davis DA, Thomson MA, Oxman AD, Haynes RB. Evidence for the effectiveness of CME. A review of 50 randomized controlled trials. *JAMA* 1992; **268**: 1111-1117.
- Dunn EV, Norton PG, Stewart M, et al (eds). *Research methods for primary care*. Volume 6. London: Sage, 1994.
- Walker M, Heady JA, Shaper AG. The prevalence of dysuria in women in London. *J R Coll Gen Pract* 1983; **33**: 411-415.
- Ovesen L, Juul S, Mabeck CE. *Sygdomsmoensteret i almen praksis. Århus amt 1983-84* [Diseases in general practice, Aarhus county 1983-84]. Aarhus, Denmark: Institut for Almen Medicin og Socialmedicink, 1987.
- Dawson JH. Practice variations: a challenge for physicians [editorial]. *JAMA* 1993; **258**: 2570.
- Mabeck CE, Vejlsgaard R. Sulphamethoxazole - trimethoprim? *Ugeskr Laeger* 1977; **139**: 290.
- Stocking B. Promoting change in clinical care. *Qual Health Care* 1992; **1**: 56-60.
- Lomas J, Haynes RB. A taxonomy and critical review of tested strategies for the application of clinical practice recommendations: from 'official' to 'individual' clinical policy. *Am J Prev Med* 1988; **4** suppl: 77-95.
- Grol R. Development of guidelines for general practice care. *Br J Gen Pract* 1993; **43**: 146-151.

Acknowledgements

We thank the Danish Society of Clinical Microbiology and the Danish Society of Urology for their willingness to give addresses of members, and the participating doctors. The survey was supported financially by a grant from the research fund of Løvens Kemiske Fabrik.

Address for correspondence

Dr F Olesen, Research Unit for General Practice, University of Aarhus, Hoegh-Guldbergs Gade 8, DK-8000 Aarhus C, Denmark.