Primary Health Care Research and Development 2002; **3**: 194–204

A quantitative study of the management of acute urinary symptoms by nurse practitioners and general practitioners in a general practice setting

Anne Price, The Ashgrove Surgery, Pontypridd, Mid Glamorgan, UK and **June Clark,** School of Health Science, University of Wales, Swansea, UK

Interest in the role of the nurse practitioner in primary care, as first point of contact for patients with acute illnesses, is well established. Recent studies in the UK have examined the role in the context of a variety of acute presentations and have addressed issues of competence, safety and patient satisfaction. The management of acute presentations involves responsibility for making a diagnosis and, frequently, for recommending medication either on prescription or to be purchased from the pharmacy. As the nurse practitioner role develops in primary care there is a need for evidence of the effective management of specific acute presentations. Protocols have been advocated as a key to the successful introduction of the nurse practitioner role but the legality of their use, particularly in relation to prescribing, remains unclear. The aim of this study was to compare, in one general practice, the management of acute urinary symptoms by nurse practitioners with that of GPs in the context of a protocol. The study was undertaken in two parts: a retrospective analysis of a sample of the records of female patients followed by a patient satisfaction survey. The retrospective analysis examined the use of the protocol in guiding the decision-making of both groups of practitioners and evaluated the outcome for the patient. The outcome indicator used in this part of the study was the need for a repeat consultation within 14 days due to non-resolution of symptoms. The retrospective analysis of records was supplemented by a patient satisfaction survey. In comparison with the GPs, the nurse practitioners' records were more complete, the prescribing rate was lower, the use of laboratory resources was similar and there was no difference in the number of patients who needed to be seen again. In the patient satisfaction study higher levels of patient satisfaction were achieved by the nurse practitioners.

Key words: nurse practitioners; nurse prescribing; protocols

Introduction

Interest in the role of the nurse practitioner in primary care is well established. Recent studies in the UK have examined their role as first point of contact for patients in the broad context of a variety of acute presentations and have addressed issues of competence, safety and patient satisfaction (Bond *et al.*, 1998; Chambers, 1998; Myers *et al.*, 1997; Reveley, 1998). Assessing and managing patients with acute presentations involves taking responsibility for making a diagnosis and for recommending medication. If the nurse practitioner role is to continue to develop in general practice then there is a need for evidence to inform future policy developments to support their involvement in the recommendation of medication and prescribing. Although protocols have been advocated as a key to the successful introduction of the nurse

Address for correspondence: Anne Price, The Ashgrove Surgery, Morgan Street, Pontypridd, Mid Glamorgan, CF37 2DR, UK. Email: anne_price@lineone.net

10.1191/1463423602pc110oa

practitioner role (Coopers and Lybrand, 1996; Department of Health, 1986; Koperski, 1997; Wynne-Jones, 1995) the legality in practice, particularly in relation to prescribing of medication, remains unclear (Tingle, 1995).

This paper reports on a study undertaken to examine the use of a protocol by nurse practitioners and GPs as a means of facilitating diagnosis and prescribing for an acute minor illness.

The contexts of nurse prescribing and protocols

The development and use of protocols to facilitate nurse prescribing has been described as one of the prerequisites to the successful introduction of the nurse practitioner role (Wynne-Jones, 1995; Koperski, 1997). In England and Wales the impetus for nurse prescribing began when the Cumberlege report identified the difficulties community nurses experienced in obtaining prescriptions for patients (Department of Health, 1986). This was endorsed by the Review of Community Nursing in Wales (Welsh Office, 1987). Both reports recommended the agreement of a limited list of products which could be prescribed by nurses with a health visiting or district nursing qualification. The Department of Health (1987) and the NHS Management Executive (1993) have also supported the development of the nurses' role as prescribers in primary care.

The scope of primary care nurses and nursing practice has evolved in ways that have outstripped the intention of the recommendations outlined above (Stilwell, 1988; South East Thames Regional Health Authority, 1994; Kaufman, 1996). Nurses in general practice, including practice nurses and nurse practitioners, have developed significant expertise in assessing and managing common minor and chronic diseases, including initiation or adjustment of prescription only medicines (Atkin and Lunt, 1996; Mayes, 1996). However, many practice nurses do not have a health visiting or district nursing qualification and do not qualify as prescribers under the terms of The Medicinal Products: Prescription by Nurses, etc. Act (Department of Health, 1992). While the evaluation of nurse-prescribing pilot sites undertaken by Luker *et al.* (1997) was positive, the study informants perceived the nurse prescribers' formulary (British Medical Association and Royal Pharmaceutical Society of Great Britain, 1998) to be restrictive. Indeed, Mayes (1996) demonstrated that implementation of nurse prescribing within the present formulary would have little impact on nurse practitioners as over 70% of prescriptions issued by the 41 nurse practitioners studied were for non-formulary items.

Nurses in general practice have found group protocols as described by the Crown Report (Department of Health, 1989) to be useful in allowing the supply and administration of prescription only medications to patients in specific circumstances. However, it is notable that the subsequent guidance on the use of group protocols (Department of Health, 1998) refers only to supply and administration, but not to prescription, of medicines. The Crown Report's recommendations on group protocols were not covered by the legislation in The Medicinal Products: Prescribing by Nurses etc. Act (Department of Health, 1992) and so the legality of protocols remains unclear. The second Crown Report (Department of Health, 1999) offers two definitions of prescribing. First, and most commonly: 'to authorise by means of an NHS prescription the supply of any medicine at public expense' (para 2.2 ii), a duty that is the preserve of authorised prescribers. Secondly, prescribing may occasionally be defined as: 'to advise a patient on suitable care or medication (including medication which may be purchased over the counter)' (para 2.2 iii). Nurses working with protocols that specify the prescription only medications they may initiate are making a prescribing recommendation to a medical practitioner who has not personally assessed the patient. Although multidisciplinary professional teams may find this an effective way to work the law does not recognize the accountability of a team, only that of an individual, so the situation of nurses and doctors working in this way remains equivocal.

The publication of the final report of the Review of Prescribing, Supply and Administration of Medicines (Department of Health, 1999) postdated this study. It discouraged the use of group protocols in circumstances where a full individual assessment of the patient was a prerequisite to prescribing. It further detailed a complex structure of independent and dependent prescribers permitted to prescribe in certain circumstances from different broad categories of medication. It may be suggested that establishing and monitoring such a

https://doi.org/10.1191/1463423602pc110oa Published online by Cambridge University Press

system may commit the National Health Service to unnecessarily complex regulations. Indeed, experience in the USA indicates that nurse practitioners need to inform policy-makers about factors that affect nurse prescribing in order to avoid overcomplicated legislation (Mahoney, 1992). Similarly, Jones (1994) encouraged nurses in the UK to accumulate evidence to support the extension of the nurses' formulary. While research has demonstrated that nurse practitioners are safe and effective care providers (South East Thames Regional Health Authority, 1994), comparisons of prescribing by nurse practitioners and GPs are needed, particularly when dealing with similar groups of patients with similar conditions (Ashburner, 1997; Coopers and Lybrand, 1996; Mayes, 1996).

Studies in general practice have revealed many positive attitudes to protocols but practitioners have expressed concerns about the quality of the evidence base, about medico-legal issues and about the ability of a protocol to change individual practice (Newton *et al.*, 1996; Siriwardena, 1995). Protocols have established a place in general practice but evidence of their impact on patient management and clinical outcomes in primary care is lacking.

Background to the study

This study seeks to contribute to the debate on the nurse practitioner role in primary care. First, in adopting roles that were formerly carried out by doctors, are nurse practitioners merely substituting for doctors or are they bringing 'added-value' to the consultation? Secondly, if nurse practitioners aspire to prescribing rights across a broad range of medication then there is a need to demonstrate good patient management and responsible prescribing practices. The authors propose that one way to inform the discussion is to evaluate an aspect of the nurse practitioner role in terms of clinical effectiveness and patient satisfaction. The study was designed to test the hypothesis that, when measured against a mutually agreed protocol, there would be no difference in the management of acute urinary symptoms by nurse practitioners and general practitioners in terms of clinical effectiveness and patient satisfaction.

Jennings *et al.* (1999) classified outcome measures as either patient-focused, provider-focused or organisation-focused. A patient-focused, diagnosis-specific indicator shows whether the condition is improving or worsening. In the context of an acute minor illness, the patient may reasonably expect the problem to be resolved in a single consultation so the patient-focused, diagnosis-specific indicator selected was evidence of resolution of symptoms at 14 days as indicated by the reconsultation rate. Patient satisfaction represents the patient's judgement of the quality of care and is itself a measurable and valid provider-focused outcome (Baker, 1990; Jennings *et al.* 1999). In this study it was used to discover if patients seen by a nurse practitioner were as satisfied with a consultation as those seen by a GP.

The study practice had 16 400 patients, with eight partners and two nurse practitioners both of whom had completed a BSc Hons (nurse practitioner) and had 2 years' experience in the role. While developing the role the nurse practitioners and GPs had jointly developed a number of protocols for managing minor illnesses that were applicable to medical and nursing practitioners alike. The protocol for adult women with acute urinary symptoms was selected for the study because of the straightforward decision-making process it described.

The practice had been fully computerized for 5 years. Every consultation was recorded using Read codes which are a hierarchical system of codes which permit standardized recording of all clinical, diagnostic, therapeutic, social and administrative procedures. The codes are cross-referenced and accessed via key words (Chisholm, 1990). This facilitated interrogation of the data base to identify specific types of consultation so that the medical and nursing practitioners' records of assessment and management of specific conditions could be compared retrospectively.

Method

The study was undertaken in two parts: a retrospective study of patient records and a separate survey of patient satisfaction.

Retrospective study

The study population was identified from the practice data base. All the practitioners were asked to list the key words they used when patients presented with acute urinary symptoms; these corresponded to 29

https://doi.org/10.1191/1463423602pc110oa Published online by Cambridge University Press

Read codes. The data base was searched for all consultations by GPs and nurse practitioners with non-pregnant women aged 18 to 65, using any of these codes, over a period of 1 year. Women with diabetes, a history of chronic urinary disease or who were currently under the care of a consultant urologist and those attending follow-up consultations within 4 weeks of a previous presentation with acute urinary symptoms, were excluded. This satisfied the criteria for implementation of the protocol against which recorded practice was to be measured. Each patient was coded in SPSS for Windows and, from this population ($n = 564$) a random sample of 50 nurse practitioner and 50 GP consultation records was generated. The age profile of the population and the sample seen by both groups of practitioners was compared.

The Protocol

The protocol defined those women with acute urinary symptoms where infection could be confidently excluded by an assessment of the presenting symptoms supported by a negative urine dipstick test result. These women required advice and analgesia and did not require antibiotic therapy. The protocol also defined those women with positive urinary nitrites on dipstick testing where infection could be positively diagnosed and antibiotics prescribed. Women presenting with urinary symptoms and inconclusive urinalysis merit careful assessment, as outlined by the protocol, and do not always require antibiotic therapy. O'Dowd *et al.* (1984a) demonstrated that GPs, exercising clinical judgement supported by urinalysis, could achieve an 80% accuracy rate in differentiating bacterial urinary infection requiring antibiotic treatment from simple urethritis when antibiotics are not necessary. Since the completion of that study near-patient urinary nitrite testing has improved the potential for diagnostic accuracy, nevertheless, the routine prescription of antibiotics by general practitioners to females presenting with urinary symptoms, regardless of a urinary dipstick test result, remains widespread (Rink, 1998).

The protocol was examined to identify the activities involved in each stage of the clinical decision-making process. Five distinct activities were identified: assessment, urinalysis, diagnosis, management and prescription of antibiotics, if appropriate. Each activity could be recorded using Read codes, or entered as free-text, at the discretion of the nurse practitioner or the GP. Following statistical advice a data collection tool was designed to record evidence of documentation of each activity. The data were collected from the Read codes and free-text entries of the random sample and entered into SPSS for Windows. Pearson's chi-square was used to compare the two independent proportions (nurse practitioner and GP) and to assess the statistical significance.

Patient satisfaction survey

A descriptive survey design was used to compare patients' satisfaction with a consultation with a GP or a nurse practitioner. However, this design could not explain phenomena or show causal relationships between them (Oppenheim, 1992). A literature search using Medline and the keywords 'questionnaire', 'consultation' and 'patient satisfaction' produced references to a number of tools used to measure patient satisfaction in general practice which had demonstrated reliability and validity (Baker, 1990; Henbest and Stewart, 1990; Kinnersley *et al.*, 1996; Lewis and Williamson, 1995; Paterson, 1996; Williams *et al.*, 1995). The consultation satisfaction questionnaire (Baker, 1990; Baker, 1996) was found to be most suited to identifying dimensions of patient satisfaction relating to perceived competence of the practitioner, it was quick to complete and suitable for use after a consultation for acute minor illness. Although developed for doctors, Poulton (1996) has piloted and validated its use with community nurses and shown it to be sufficiently sensitive to compare quality of care between different groups of health professionals.

All the practitioners were asked to give a consultation satisfaction questionnaire and explanatory letter to all women fitting the same criteria as those defined in the retrospective study. Data collection was continued until 25 completed questionnaires had been received from women who had seen one of the nurse practitioners and 25 from women who had seen one of the GPs. The women were asked to complete the questionnaire before leaving the surgery and leave it in a sealed box on the reception desk. The name of each patient who received a questionnaire was noted but the responses were confidential. At the end of each week all the relevant consultations were identified using the Read code search and patients who had not received a questionnaire were sent one in the post with an explanatory letter and post-paid envelope. Nonresponse rates were calculated for both groups of practitioners.

https://doi.org/10.1191/1463423602pc110oa Published online by Cambridge University Press

The consultation satisfaction questionnaire consists of 18 questions with a five-point scale of responses ranging from 'strongly agree' to 'strongly disagree'. Some questions are phrased negatively, for example: 'Some things about my consultation with the doctor/nurse practitioner could have been better' and in this case the positive response would be 'strongly disagree'. For each question a score of one is given for the most negative response through to a maximum score of five for the most positive response. Studies incorporating principal component analysis (Baker, 1990; Baker, 1996; Kinnersley *et al.*, 1996; Poulton, 1996) have shown that the responses to the questions correlate with three subscales labelled: factor one, professional care; factor two, depth of relationship; factor three, perceived time (as shown in Table 1). The remaining three questions are grouped in a further subscale called general satisfaction. The scores of the questions in each scale are added together and converted to a scale of zero to 100 with zero representing complete dissatisfaction and 100 representing complete satisfaction (Baker, 1996).

The data were entered into SPSS for Windows for analysis. The mean and median satisfaction scores, standard deviation and range was calculated for the nurse practitioners and the GPs within each subscale. The use of mean and standard deviations with nonparametric data is accepted by most statisticians who work with psychologists (Baker, personal communication) and has become an acceptable way to summarize the results of Likert-type scales (Oppenheim, 1992). The statistical significance of the relationship was tested using the Mann-Whitney U.

Table 1 The Consultation Satisfaction questionnaire (Baker 1990)

Question no.	Attitude statement	Factors
1	I am totally satisfied with my visit to this NP/GP[a]	General satisfaction
2	This NP/GP was very careful to check everything when examining me	Professional care
3	I will follow this NP/GP's advice because I think she/he is absolutely right	Professional care
4	I felt able to tell this NP/GP about very personal things	Depth of relationship
5	The time I was able to spend with this NP/GP was a bit too short	Perceived time
6	This NP/GP told me everything about my treatment	Professional care
7	Some things about my consultation with the NP/GP could have been better	General satisfaction
8	There are some things this NP/GP does not know about me	Depth of relationship
9	This NP/GP examined me very thoroughly	Professional care
10	I thought this NP/GP took notice of me as a person	Professional care
11	The time I was allowed to spend with the NP/GP was not long enough to deal with everthing I wanted	Perceived time
12	I understand my illness much better after seeing this NP/GP	Professional care
13	This NP/GP was interested in me as a person not just my illness	Professional care
14	This NP/GP knows all about me	Depth of relationship
15	I felt this NP/GP really knew what I was thinking	Depth of relationship
16	I wish it had been possible to spend a little longer with the NP/GP	Perceived time
17	I am not completely satisfied with my visit to the NP/GP	General satisfaction
18	I would find it difficult to tell this NP/GP about some private things	Depth of relationship

Possible responses to each question are: strongly agree/agree/neutral/disagree/strongly disagree.
[a]Nurse practitioner; general practitioner.

Results

Retrospective study: use of the protocol

Table 2 shows that there was no significant difference between the age distribution of the patients seen by a nurse practitioner and the age distribution of the patients seen by a GP in the study population or in the sample population.

The protocol listed dysuria, frequency, pyrexia, abdominal pain and loin pain as important symptoms to consider in the assessment of the patient's presenting complaint. As shown in Table 3 the nurse practitioners' consultation records were more likely to include a note of the assessment of the presence or absence, of these symptoms (Pearson chi-square 25.156, $P < 0.001$).

The protocol advised dipstick urinalysis for all patients presenting with acute urinary symptoms. Table 3 shows that the records kept by the nurse practitioners were significantly more likely to record the result of this test (Pearson chi-square

https://doi.org/10.1191/1463423602pc110oa Published online by Cambridge University Press

Table 2 Distribution of age groups of the study population and sample population of female patients seen by nurse practitioners and GPs ($P > 0.1$)

	Patient age groups			
	18–30	31–40	41–50	51–65
Seen by nurse practitioner				
Population, $n = 126$;	38.9%	17.5%	19.8%	23.8%
sample population, $n = 50$	44%	22%	18%	16%
Seen by general practitioner				
Population, $n = 438$;	40.2%	14.8%	17.4%	27.6%
sample population, $n = 50$	52%	10%	14%	24%
Total population, $n = 564$;	39.9%	15.4%	17.9%	26.8%
sample population, $n = 100$	48%	16%	16%	20%

The percentages represent the proportion of the total population and the sample population falling within each age range.

Table 3 Summary of results of the retrospective survey of the records of female patients

Record of:	NP	GP
Assessment of patient	48 (96%)	26 (52%)
Urinalysis	47 (94%)	25 (50%)
Management plan	44 (88%)	25 (50%)
Antibiotics prescribed	34 (68%)	50 (100%)
Repeat consultation	6 (12%)	10 (20%)

Figures (%) represent the number of patient records in which a recording of that activity was made.

24.008, $P < 0.001$). These records included urinalysis undertaken at the time of the consultation, by the practice nurse, at the request of the practitioner. All the patients seen by either nurse practitioners or GPs who had positive nitrites received first-line antibiotics appropriately according to the protocol (trimethoprim or amoxycillin).

The records were searched for evidence of one or more of the four elements of the management plan proposed by the protocol: advice, mid-stream urine sample (MSU) for culture and sensitivity (when indicated), analgesia and appropriate follow-up. Table 4 shows that the nurse practitioners recorded at least one element of the management plan significantly more frequently than the GPs (Pearson chi-square 16.327, $P < 0.001$). Twenty-five (50%) of the nurse practitioners' records included two or more elements of the management plan. The GPs occasionally recorded advice, analgesia and appropriate follow up but the most frequent element of a GP's management plan was to request a MSU. There was no significant difference in frequency of requesting a MSU between the two groups of practitioners (Pearson chi-square 0.386, $P > 0.5$).

The protocol defines the indications for antibiotic therapy. A consultation with a nurse practitioner was significantly less likely to result in an antibiotic being prescribed (Pearson chi-square 19.048, $P < 0.001$). All consultations with a GP resulted in prescription of an antibiotic (Table 3). Ninety-one per cent of all prescriptions provided the first-line antibiotics recommended in the protocol with no significant difference between the nurse practitioners and the GPs.

The data were examined for evidence that the management decisions were based on the assessment and initial investigation of the patient in accordance with the protocol. Ninety-six per cent of the records of patients seen by a nurse practitioner showed clear evidence of use of the protocol. Forty-eight per cent of the records of patients seen by a GP showed clear evidence of use of the protocol, 2% were in conflict with the protocol but the remaining 50% of the GPs' records did not contain enough evidence for a judgement to made.

Outcome of the retrospective study

Six patients who had originally seen the nurse practitioner and ten patients who had originally seen the GP attended again within 14 days due to non-resolution of symptoms (Pearson chi-square 2.439, $P > 0.1$). All the patients who needed a further consultation had originally been treated with antibiotics. None of the patients ($n = 16$) who saw a nurse practitioner and did not receive antibiotic treatment consulted again. The reasons for follow up are listed in Table 5. One patient reacted adversely to the antibiotics and nine patients did not respond to initial antibiotic treatment. One patient initially seen by a nurse practitioner and three initially seen by a GP developed further symptoms that resulted in revision of the original diagnosis. Two patients initially seen by the GP developed chronic symptoms and were referred to a consultant urologist.

Patient satisfaction survey

The patient satisfaction questionnaires were distributed as described above and distribution con-

https://doi.org/10.1191/1463423602pc110oa Published online by Cambridge University Press

Table 4 Frequency of recording of any management and the individual elements of a management plan in the patient's record

Consultation records	Any management recorded	Advice recorded	Analgesia recorded	MSU recorded	Follow up recorded
Seen by NP ($n = 50$)[a]	44 (88%)	22 (44%)	15 (30%)	18 (36%)	22 (44%)
Seen by GP ($n = 50$)	25 (50%)	3 (6%)	1 (2%)	23 (46%)	5 (10%)

Figures (%) represent the number of patient records in which a recording of that activity was made.
[a]25 (50%) of the nurse practitioners records contained more than one individual element of the management plan.

Table 5 Frequency of repeat consultation for the same problem or a complication related to the original problem within 14 days of original presentation to the nurse practitioner or general practitioner

Consultation records	Treatment side effect	Antibiotic changed	Diagnosis revised	Referral to urologist
Seen by NP ($n = 50$)	1 (2%)	4 (8%)	1 (2%)	
Seen by GP ($n = 50$)		5 (10%)	3 (6%)	2 (4%)
$P = 0.1$				

All these patients had initially been treated with antibiotics.

tinued until 50 completed questionnaires had been returned, 25 relating to nurse practitioner consultations and 25 relating to GP consultations. The nurse practitioners saw 27 patients who qualified for the study during the data collection period and the 25 completed questionnaires represented a 93% response rate. Twenty-four questionnaires were completed at the time of the consultation and one was returned by post. The GPs saw 53 qualifying patients before the target of 25 completed questionnaires was achieved, a response rate of 47%. Thirteen questionnaires were completed at the time of the consultation and 12 were returned by post. The results from the patient satisfaction survey are shown in Table 6.

Professional care

The subscale 'professional care' combines the responses to seven of the questions. Patients who saw a nurse practitioner were more satisfied but the difference was not statistically significant (Mann–Whitney U 220.5, $P < 0.1$).

Depth of relationship

The subscale 'depth of relationship' combines the responses to five of the questions. Table 6 shows a higher mean and median value for satisfaction for the nurse practitioners than for the GPs, with a wider range of responses for the GPs. This difference was statistically significant (Mann–Whitney U 179.0, $P < 0.01$).

Table 6 Results of the Consultation Satisfaction questionnaire completed by 50 women aged 18–65 following consultation with a nurse practitioner or a GP

Factor	NP				GP			
	Mean	Median	Range	Standard deviation	Mean	Median	Range	Standard deviation
Professional care	84.4	83.3	70–100	9.4	79.6	80.0	60–100	10.3
Depth of relationship	75.8	76.0	48–96	10.9	65.8	68.0	36–88	13.7
Perceived time	79.2	80.0	40–100	13.5	71.5	73.3	40–100	16.0
General satisfaction	88.0	86.6	73–100	8.8	78.1	80.0	47–100	13.9

The scores of the questions in each scale have been added together and converted to a scale of zero to 100 with zero representing complete dissatisfaction and 100 representing complete satisfaction (see text).

https://doi.org/10.1191/1463423602pc110oa Published online by Cambridge University Press

Perceived time

The subscale 'perceived time' combines the responses to three of the questions. Table 6 shows a higher mean and median value for satisfaction for the nurse practitioners than for the GPs but the difference was not significant (Mann–Whitney U 233.5, $P > 0.1$).

General satisfaction

The subscale 'general satisfaction' combines the responses to questions 1, 7 and 17. Table 6 shows a higher mean value for satisfaction for the nurse practitioners than for the GPs, with a wider range of responses for the GPs. This difference was statistically significant (Mann–Whitney U 180.0, $P < 0.01$).

Discussion

This study aimed to compare the management of acute urinary symptoms by nurse practitioners and GP when guided by a protocol. The outcome for the patient was evaluated using, as indicators, the resolution of symptoms and patient satisfaction. The strength of the design was that a single condition was studied in a well defined study population. However, the number of practitioners and patients involved in the study was small and there was no randomization of patients to practitioners.

The retrospective study looked at existing records so that the research process had no influence on the outcome of these consultations. The lack of detail in the GPs' records made it difficult to assess the use of the protocol but that may reflect a difference in recording behaviour rather than actual activity. It is possible that the patients who saw a GP had more severe symptoms and were selecting a consultation with a doctor rather than a nurse practitioner but the results of the urine samples sent and the urinalysis carried out at the time of consultation appeared to indicate that patients had similar degrees of morbidity. Also, because of the acute nature of the problem, these patients were often seen as emergency appointments and these were allocated to practitioners in this surgery on a nonselective rota basis. However, there is no doubt that randomized trials such as those recently completed in Cardiff (Kinnersley *et al*., 2000) and Manchester (Venning *et al.*, 2000) should overcome these shortcomings.

Comprehensive record keeping is particularly important to the developing role of the nurse practitioner as, in taking on what have traditionally been medical roles, a nurse would be judged against a reasonable standard of medical care. The quality of the written record is crucial if use of a protocol is to be demonstrated. In the USA it is an adequate defence to be able to demonstrate the use of a clinical protocol in patient care, or to have documented the reason why the protocol was not applied, whether it be a clinical judgement in the patient's best interest or lack of patient consent to agree to a course of treatment (Murphy, 1997). The legal issues have not been fully explored in the UK but legal opinion suggests that the use of protocols, supported by accurate patient records, may be used in court proceedings against the practitioner or in support of the practitioner (Tingle, 1995).

Concern about increasing bacterial resistance makes decision-making about antibiotic use particularly significant. Inappropriate demand for antibiotics by the public is common (Audit Commission, 1994) but in this study the nurse practitioners demonstrated a significantly lower prescribing rate and used antibiotics appropriately. This was achieved with acceptable outcomes as measured by resolution of symptoms and patient satisfaction. The proposals of the Prescribing Review (Department of Health, 1999) specifically excluded antibiotics from any proposed extension of prescribing to nurses but these results do not support this stance. On the contrary, these nurse practitioners demonstrated responsible and discriminatory use of antibiotics but further studies are needed, if that is to be demonstrated, by other nurse practitioners and in other clinical situations.

In a study of clinical judgement in the management of frequency and dysuria in general practice, O'Dowd *et al*. (1984b) suggested that GPs weighed up the severity of symptoms and unspecified 'psychosomatic markers' in making the decision to give or withhold antibiotics. The results presented in this paper suggest that nurse practitioners can achieve a similar level of clinical judgement. Advanced nursing practice has been characterized by evidence of more individualized, discretionary judgment and less reliance on rigid rule following or adherence to stated criteria (Benner, 1984; Brykczynski, 1989). On the other hand, strict adherence to a protocol implies a reduced focus on personal, individualized care.

https://doi.org/10.1191/1463423602pc110oa Published online by Cambridge University Press

Benner is not without critics. Cash (1995) suggests that her approach only validates the practice of authority and tradition and that intuition, however valid and reliable in an individual case, does not give credence to nursing knowledge or redress the balance of power with medical epistemology. It may be reasonable to propose that advanced nursing practice achieves a balance between knowledge and intuition, the science and art of nursing.

Equivalent or higher patient satisfaction scores with nurse practitioner care rather than physician care are a consistent finding in the UK and the USA (Brown and Grimes, 1995; Coopers and Lybrand, 1996; Mundinger *et al.*, 2000; Myers *et al.*, 1997; Reveley, 1998; South East Thames Regional Health Authority, 1994). There are a number of factors which may explain these differences: first, nurse practitioners tend to have longer consultation times than GPs. Studies have shown that shorter consultations are associated with lower levels of satisfaction (Baker, 1996; Morrell *et al.*, 1986) while longer general practitioner consultations are associated with more listening, explanation, anticipatory care and health promotion (Howie *et al.*, 1997; Wilson *et al.*, 1995). Secondly, the proportion of the GPs' satisfaction questionnaires that were returned by post may have affected their results. Completion of the questionnaire at home rather than in the surgery at the time of consultation has been associated with a mean reduction in satisfaction scores of 5.8% (Kinnersley *et al.*, 1996). The scale of this study did not allow control of this variable. Finally, the 'Hawthorne' effect is the term given to the alteration in subjects' responses as a result of inclusion in a research project. The nurse practitioners and GPs were aware that they were subject to a satisfaction survey and should have experienced this effect equally, however, the commitment of the nurse practitioners to the project, evidenced by their high rate of distribution of questionnaires at the time of consultation, may mean that they experienced this effect to a greater degree.

Patient satisfaction has proved a difficult outcome to measure. Baker (1997) suggests that this is because there is no theory to explain its meaning. Patients are generally 'satisfied', but in larger studies the Consultation Satisfaction Questionnaire has been shown to discriminate between underlying practice variables (Baker, 1996). Baker asserts that this is because this tool is based on a pragmatic model of patient satisfaction that depicts the relationship between the satisfaction variables identified from the literature and from comments made by colleagues and patients. The model defines satisfaction as an attitude that is continuous rather than dichotomous and multidimensional as a patient may, within the same consultation, be satisfied with the amount of time available but dissatisfied with the clinical examination. However, within the present study setting it is proposed that the higher satisfaction scores achieved by the nurse practitioners represent an aspect of 'added value' which merits further definition.

There is a much greater body of nurse practitioner research in the USA than in the UK. Nevertheless, as Brown and Grimes (1995) emphasize, much of this research is hampered by the shortcomings discussed here. In a rigorous meta-analysis of published and unpublished work in the USA, Brown and Grimes (1995) found just three randomized trials which used patient satisfaction as an outcome and were sufficiently robust to be included in their analysis. These studies found significantly higher levels of patient satisfaction with nurse practitioner care ($P < 0.0001$). Mundinger *et al.* (2000) have published the results of a randomized trial in which patient satisfaction between independent nurse practitioners and physicians was not significantly different. Brown and Grimes (1995) suggest that future research should identify the 'process of care' as the independent variable. If a nurse practitioner is providing the same care as a doctor then what justifies her separate existence? If patients value a different quality of care then what makes it different and why is it so? Coopers and Lybrand (1996) suggest that it is too simple to assume that nurses are simply acquiring and using doctors' skills, and propose that their success is due to practicing their skills from a nursing perspective. This leads the researcher to the body of qualitative research that seeks to identify the process of care used by nurse practitioners (for example, Brykczynski, 1989; Johnson, 1993). This is an area of enquiry under-represented in the UK.

This study has compared nurse practitioners with GPs in a specific role in which the nurse practitioners were trained and experienced and does not seek to suggest that nurse practitioners could, or should, replace GPs. In seeking increased involvement in patient care nurses must accept the need for formal evaluation but while the comparative approach is logical it also has the potential to cre-

https://doi.org/10.1191/1463423602pc110oa Published online by Cambridge University Press

ate discomfort or conflict within teams where none existed prior to the research process. If nurse practitioners do indeed bring added value to some aspects of consultations in primary care then the challenge for future research is to identify that contribution and promulgate it. The authors have no doubt that doctors and nurses have much to learn from each other, indeed, as Hopkins *et al.* (1996) suggest, medicine and nursing should be striving for interdependence rather than independence.

Conclusion

The nurse practitioners in this study demonstrated management of acute urinary symptoms equivalent to management by the GPs. Their records were more complete, their prescribing rate was lower, and they made similar use of laboratory resources. This equivalence was achieved with no increase in the number of patients who needed to be seen again and with higher patient satisfaction. Although it cannot be concluded that the protocol was the only significant factor it was evidently a significant part of the nurse practitioners' decision-making.

This study supports the use of protocols to guide nurse practitioners in their work and to facilitate prescribing, however, further work is needed to demonstrate the applicability of protocols to other nurse practitioners and in more complex clinical situations.

Acknowledgements

This study was undertaken as part of a BSc Hons and funded by The Ashgrove Surgery. Thanks are due to the nurse practitioners and general practitioners who participated in the study, particularly to Dr Ian Morgan for his guidance and encouragement. Statistical advice was given by Shan Davies, School of Health Science, University of Swansea.

References

Ashburner, L., Birch, K., Latimer, J. and **Scrivens, E.** 1997: *Nurse practitioners in primary care: The extent of practice and research*. Keele University, Keele: Centre for Health Planning and Management.

Atkin, K. and **Lunt, N.** 1996: Negotiating the role of the practice nurse in general practice. *Journal of Advanced Nursing* 24, 498–505.

Audit Commission 1994: *A Prescription for improvement. Towards more rational prescribing in General Practice*. London: HMSO.

Baker, R. 1990: Development of a questionnaire to assess patients' satisfaction with consultations in general practice. *British Journal of General Practice*. 40, 487–90.

Baker, R. 1996: Characteristics of practices, general practitioners and patients related to levels of patients' satisfaction with consultations. *British Journal of General Practice* 46, 601–605.

Baker, R. 1997: Pragmatic model of patient satisfaction in general practice: progress towards a theory. *Quality in Health Care* 6, 201–204.

Benner, P. 1984: *From novice to expert. Excellence and power in clinical nursing practice*. California: Addison-Wesley Publishing Co.

Bond, S., Cunningham, B., Sargeant, J., Derrick, S., Beck, S., Rawes, G., Healy, B., Lawson, J. and **Holdsworth, S.** 1998: *Evaluation of nurse practitioners in general practice in Northumberland. The EROS projects 1 and 2*. University of Newcastle, Newcastle upon Tyne: Centre for Health Services Research.

British Medical Association and Royal Pharmaceutical Society of Great Britain 1999: *British national formulary*. London: British Medical Association and Royal Pharmaceutical Society of Great Britain.

Brown, S.A. and **Grimes, D.E.** 1995: A meta-analysis of nurse practitioners and nurse midwives in primary care. *Nursing Research* 44, 332–39.

Brykczynski, K.A. 1989: An interpretive study describing the clinical judgement of nurse practitioners. *Scholarly Inquiry for Nursing Practice* 3, 75–104.

Cash, K. 1995: Benner and expertise in nursing: a critique. *International Journal of Nursing Studies* 32, 527–34.

Chambers, N. 1998: *Nurse practitioners in primary care*. Oxford: Radcliffe Medical Press.

Chisolm, J. 1990: The Read clinical classification. *British Medical Journal* 300, 1092.

Coopers and **Lybrand**. 1996: *Nurse practitioner evaluation project. Final report*. London: NHS Executive.

Department of Health 1986: *Neighbourhood nursing. A focus for care. Report of the community nursing review*. (The Cumberledge report). London: HMSO.

Department of Health 1987: *Promoting better health. The Government's programme for improving primary health care*. London: Department of Health.

Department of Health 1989: *Report of the advisory group on nurse prescribing*. (Crown Report). London: Department of Health.

Department of Health 1992: *Medicinal products: Prescription by nurses, etc. Act*. London: HMSO.

Department of Health 1998: *Review of supply prescribing and administration of medicines. A report on the supply and administration of medicines under group protocols*. London: Department of Health.

Department of Health 1999: *Review of prescribing, supply and administration of medicines*. London: Department of Health.

Henbest, R.J. and **Stewart, M.** 1990: Patient centredness in the consultation. 2: Does it really make a difference? *Family Practice* 7, 28–33.

Hopkins, A., Solomon, J. and **Abelson, J.** 1996: Shifting boundaries in professional care. *Journal of the Royal Society of Medicine* 89, 364–71.

Howie, J.G, Heaney, D.J. and **Maxwell, M.** 1997: *Measuring quality in general practice*. Occasional Paper No. 75. London: Royal College of General Practitioners.

Jennings, B.M., Staggers, N. and **Brosch, L.R.** 1999: A classification scheme for outcome indicators. *Image: Journal of Nursing Scholarship* 31, 381–88.

Johnson, R. 1993: Nurse practitioner–patient discourse: uncovering the voice of nursing in primary care practice. *Scholarly Inquiry for Nursing Practice* 7, 143–57.

Jones, M. 1994: Scripted by nurses. *Primary Health Care* 4, 8–11.

Kaufman, G. 1996: Nurse practitioners in general practice: an expanding role. *Nursing Standard* 11, 44–47.

Kinnersley, P., Stott, N., Peters, T., Harvey, I. and **Hackett, P.** 1996: A comparison of methods for measuring patient satisfaction with consultations in primary care. *Family Practice* 13, 41–51.

Kinnersley, P., Anderson, E., Parry, K., Clement, J., Archard, L., Turton, P., Stainthorpe, A., Fraser, A., Butler, C.C., and **Rogers, C.** 2000: Randomised controlled trial of nurse practitioner versus general practintioners care for patients requesting 'same day' consultations in primary care. *British Medical Journal*, 320, 1043–48.

Koperski, M. 1997: Nurse practitioners in general practice – an inevitable progression*? British Journal of General Practice* 47, 696–98.

Lewis, J.R. and **Williamson, V.** 1995: Examining patient perceptions of quality care in general practice: comparison of quantitative and qualitative methods. *British Journal of General Practice* 45, 249–53.

Luker, K., Austin, L., Willock, J., Ferguson, B. and **Smith, K.** 1997: Nurses' and general practitioners' views of the nurse prescribers formulary. *Nursing Standard* 11, 33–38.

Mahoney, D.F. 1992: Nurse practitioners as prescribers: past research trends and future study needs. *Nurse Practitioner* 17, 44–51.

Mayes, M. 1996: A study of prescribing patterns in the community. *Nursing Standard* 10, 34–37.

Morrell, D.C., Evans, M.E., Morris, R.W. and **Roland, M.O.** 1986: The 'five minute' consultation: effect of time constraint on clinical content and patient satisfaction. *British Medical Journal* 292, 870–73.

Mundinger, M.O., Kane, R.L., Lenz, E.R., Totten, A.M., Tsai, W., Cleary, P.D., Friedewald, W.T., Siu, A.L. and **Shelanski, M.L.** 2000: Primary care outcomes in patients treated by nurse practitioners or physicians. *Journal of the American Medical Association* 283, 59–68.

Murphy, R.N. 1997: Legal and practical impact of clinical practice guidelines on nursing and medical practice. *The Nurse Practitioner* 22, 138, 147–48.

Myers, P.C., Lenci, B. and **Sheldon, M.G.** 1997: A nurse practitioner as the first point of contact for urgent medical problems in a general practice setting. *Family Practice* 14, 492–97.

Newton, J., Knight, D. and **Woolhead, G.** 1996: General practitioners and clinical guidelines: a survey of knowledge, use and beliefs. *British Journal of General Practice* 46, 513–17.

NHS Management Executive 1993: *New world, new opportunities.* Leeds: Department of Health.

O'Dowd, T.C., Ribeiro, C.D., Munro, J., West, R.R., Howells, C.H.L. and **Harvard Davis, R.** 1984a: Urethral syndrome: a self limiting illness. *British Medical Journal* 288, 1349–52.

O'Dowd, T.C., Smail, J.E. and **West, R.R.** 1984b: Clinical judgement in the diagnosis and management of frequency and dysuria in general practice. *British Medical Journal* 288, 1347–49.

Oppenheim, A.N. 1992: *Questionnaire design, interviewing and attitude measurement*, new edition. London: Pinter Publishers.

Paterson, C. 1996: Measuring outcomes in primary care: a patient generated measure, MYMOP, compared with the SF-36 health survey. *British Medical Journal* 312, 1016–20.

Poulton, B.C. 1996: Use of the consultation satisfaction questionnaire to examine patients' satisfaction with general practitioners and community nurses: reliability, replicability and discriminant validity. *British Journal of General Practice* 46, 26–31.

Reveley, S. 1998: The role of the triage nurse in general medical practice: an analysis of the role. *Journal of Advanced Nursing* 28, 584–91.

Rink, E. 1998: Risk factors for urinary tract symptoms in women: beliefs among general practitioners and women and the effect on patient management. *British Journal of General Practice* 48, 1155–58.

Siriwardena, A.N. 1995: Clinical guidelines in primary care: a survey of general practitioners' attitudes and behavior. *British Journal of General Practice* 45, 643–47.

South East Thames Regional Health Authority 1994: *Evaluation of nurse practitioner pilot projects*. London: Touche Ross & Co.

Stilwell, B. 1988: Patient attitudes to a highly developed extended role – the nurse practitioner. *Recent Advances in Nursing* 21, 82–100.

Tingle, J. 1995: Clinical protocols and the law. *Nursing Times* 91, 27–28.

Venning, P., Durie, A., Roland, M., Roberts, C. and **Leese, B.** 2000: Randomised controlled trial comparing cost effectiveness of general practitioners and nurse practitioners in primary care. *British Medical Journal*, 320, 1048–53.

Welsh Office 1987: *Nursing in the community. A team approach for Wales* (The Edwards Report). Cardiff: Welsh Office.

Williams, S., Weinman, J., Dale, J. and **Newman, S.** 1995: Patient expectations: what do primary care patients want from the GP and how far does meeting expectations affect patient satisfaction? *Family Practice* 12, 193–201.

Wilson, A., MacDonald, P., Hayes, L. and **Cooney, J.** 1995: Health promotion in the general practice consultation: a minute makes a difference. *British Medical Journal* 304, 227–30.

Wynne-Jones, M. 1995: Nurse prescribing. *Practice Nursing* 6, 2.