

Written advice: compliance and recall*

VICTORIA A. GAULD, BMS

Medical Student, University of Nottingham

SUMMARY. Sixty-two women consulting their general practitioner with symptoms of urinary tract infection were assigned at random to either an experimental group, who were given a set of pre-standardized instructions both verbally and in written form, or a control group, who received the same advice in verbal form only.

On follow-up, the written advice was found to increase the amount of information remembered by the patients both about the medication and other behavioural advice, but to have no obvious effect on compliance with the course of antibiotics prescribed.

Further research is needed, investigating different diseases, to substantiate these findings and help to decide whether patients in general practice should be given written advice.

Introduction

DESPITE widespread recognition of non-compliance with medical advice, relatively few attempts have been made to improve compliance. Ley (1972) summarized the findings of 68 studies, and showed that varying degrees of deviation from instructions occur in all fields of medicine, whether the advice is for behavioural changes, preventive action or taking medicine. It is important to improve patient compliance with antibiotics, given the widespread use of those drugs and the fact that courses are rarely finished (Dunnell and Cartwright, 1972).

Recall is a prerequisite of compliance and Ley and Spelman (1967) argue that part of non-compliant behaviour is due to the patients' failure to understand and remember what they are told.

Reviewers of the vast amount of literature available on factors determining non-compliance still cannot identify a non-compliant type of person. Many suggest

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that providing written instructions is one possible method of improving compliance (Haynes *et al.*, 1979). 'Patient package inserts', given to patients with their medication by pharmacists, have been shown to be effective in reducing medication errors in a few trials (for example, Sharpe and Mikeal, 1974), but they do not include behavioural and preventive aspects of the advice. Also, most of these written inserts have involved giving extra advice in writing, and do not indicate whether the benefit obtained is greater than would be achieved by giving the extra advice verbally.

Ley and colleagues (1976) showed that there was a considerable reduction in medication errors when sufficiently comprehensible leaflets, according to the Flesch formula for reading ease, were issued to patients. The Flesch formula is based on the assumption that if words and sentences are shorter in a given piece of writing, more people will be able to read it (Flesch, 1948). Although it was originally calculated for the American population, the formula has been shown to be applicable to British subjects.

Aims

The aim of the experiment was to conduct a prospective, controlled trial so that the effects of written advice on patient compliance and recall could be ascertained. The study attempted to discover, firstly, whether reinforcing spoken instructions with written advice improves patients' recall of advice and, secondly, whether it improves compliance with both medication and advice. Factors affecting recall and compliance and the patients' satisfaction with the written instructions were also investigated.

Method

The study population consisted of each female patient aged 15 to 64 who consulted one of 18 general practitioners during a seven-week period with symptoms referable to the urinary tract (that is, frequency, dysuria, urgency or loin pain) for whom the doctor prescribed an antibiotic. The 18 doctors worked in eight

practices south-west of Nottingham in a mixed industrial and suburban area.

The instructions

A set of standard instructions for treating urinary tract infection was formulated by consulting each of the general practitioners and various sources of literature (Mayo, 1975; Health Education Council, 1976). The clearest form of written instructions is at present under considerable debate, but in this study the advice was simplified so that it could be read by at least 85 per cent of the population, according to the Flesch formula, and was made as concise and informal as possible. Each instruction was printed onto an adhesive label, which enabled the general practitioner to omit a piece of advice if it was inappropriate for a particular patient (see Figure).

Each general practitioner was provided with 18 sampling envelopes. These were randomized in such a way as to ensure adequate mixing of control and experimental subjects between the doctors. The envelopes contained the sampling cards, 'written' or 'verbal', and a

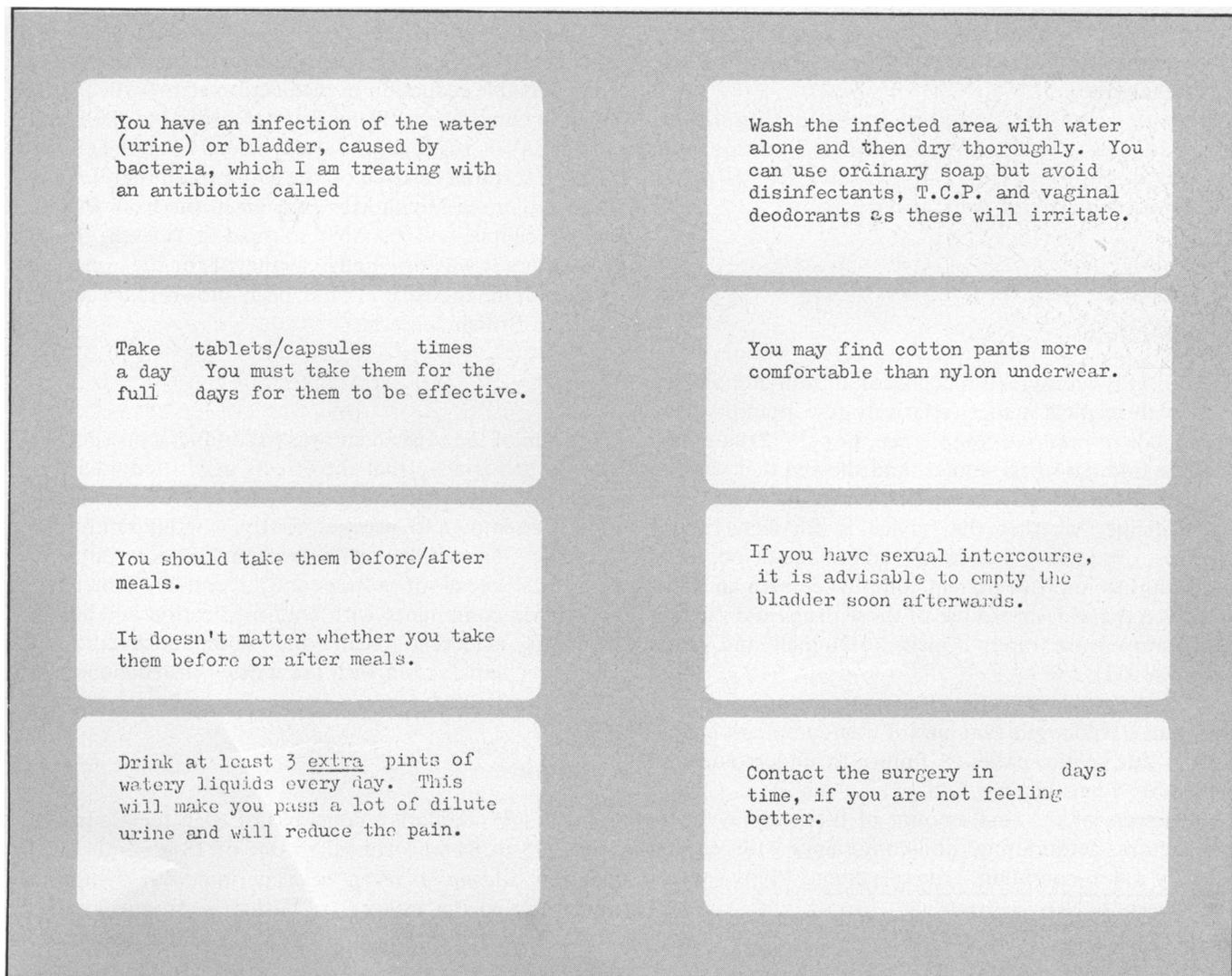
form which the doctor completed after the interview giving details of which instructions he had given. All the patients were given the standardized advice verbally at the end of the consultation, and then those in the experimental sample were handed the written leaflet.

Interview and questionnaire

All the patients were interviewed by the author in their own home four or five days after the consultation. This was before the end of their courses of antibiotics, so that the number of remaining tablets could be counted and their compliance with the medication calculated. While the pills were being counted, the patients were asked to complete a questionnaire. They were then asked to recall each of the doctor's instructions as accurately as possible. All of the questions were answered before it was known to which of the two experimental groups the patient belonged.

The questionnaire contained 33 closed questions and three open-ended questions. It included various demographic and socio-psychological factors because these might have affected the compliance and/or recall and

Printed instructions given to the patients.



annulled the effects of the written advice. The demographic variables measured included age, social class, race and educational level. The socio-psychological factors included the following:

1. Whether or not another subject was discussed during the consultation.
2. The number of instructions given.
3. The type and dosage of antibiotic given.
4. Whether any other medication was being taken.
5. Whether the patient received help in remembering to take the tablets.
6. Whether the patient had had a previous episode of the infection and her perception of how new the advice was to her.
7. Comprehension of the advice.
8. Satisfaction with the advice.
9. How troublesome the patient found the illness.
10. The patient's perception of the seriousness of the disease.

The latter four factors were measured by constructing questions similar to those used by Ley (1976) and dividing the response into four categories; for example:

very serious
serious
fairly serious
not at all serious

or

very satisfied
quite satisfied
hardly satisfied
not at all satisfied

Statistical methods

The data obtained were analysed using the chi-square test (χ^2) and, where the frequencies were small, the Fisher's exact probability test (FET). The chi-square test was chosen because it is a non-parametric test which does not assume that the interval between adjacent points on a scale of variables is of the same magnitude.

Results

Sixty-two patients were seen over the two-month period, 30 of whom were in the experimental group. No patient refused to co-operate in the study and only one could not be contacted, so the response rate was 98.4 per cent. The sample was found to be representative of the general population according to social class distribution ($\chi^2 = 0.000001$, d.f. = 2, $p > 0.95$). No demographic differences were established between the control and experimental groups and, of the other variables investigated, the only difference revealed was that the patients in the control group perceived their illness as

Table 1. Recall of control and experimental groups.

Per cent recall	Control (no written advice)	Experimental (written advice)	Total
0-59	10	2	12
60-89	13	8	21
90-100	9	20	29
Total	32	30	62

$\chi^2 = 10.64$, d.f. = 2, $p < 0.01$

Table 2. Compliance of control and experimental groups.

Per cent compliance	Control (no written advice)	Experimental (written advice)	Total
0-89	13	8	21
90-100	16	21	37
Total	29	29	58

$\chi^2 = 1.191$, d.f. = 1, $0.3 > p > 0.2$.

being slightly more serious than those in the experimental group ($p < 0.05$ FET).

The experimental group was shown to have increased recall over the control group. The increase was statistically highly significant (Table 1).

There was no significant improvement in compliance among the experimental group in either medicine taking (Table 2) or the behavioural aspects of the advice.

Patients over-reported their compliance with medication instructions. This fact emerged when the results of the pill count were compared with the patient's own estimate of compliance. It may be that the patients' assessment of their behavioural compliance was also unreliable. Most non-compliance consisted of errors of omission. Scheduling misconceptions were minimal and no errors of commission were revealed by the pill count.

None of the demographic variables measured was found to have any significant effect on recall. Age was the only demographic factor related to medicine taking: compliance was significantly lower in patients under 25 than in patients in two older age ranges ($\chi^2 = 6.624$, d.f. = 2, $p < 0.05$).

None of the socio-psychological factors measured was shown to influence either recall or compliance.

Of the 30 patients in the experimental group, only two were unable to produce the card as evidence that they had kept the instructions. Satisfaction with the written advice was high and most of the group gave reasons in support of their satisfaction.

Discussion

The increased recall when written instructions were provided confirms the evidence of Ley and colleagues (1976). A recent report stated that people generally

retain 20 per cent of what they hear, but remember 50 per cent of what they hear and see, provided the visual input is not instantly removed (Winer, 1979). In giving the patients a leaflet, the information is available for reference when needed.

The facts to be recalled in this study consisted largely of behavioural advice. An improvement in compliance for aspects other than drug-taking might therefore have been expected in the experimental group. Over-reporting of adherence to the advice may have masked any improvement that existed. Better methods of measuring these behavioural aspects of compliance might reveal a significant increase in future research.

The improvement in drug compliance reported by Ley and colleagues (1976) and by Sharpe and Mikeal (1974) where patients received written advice is not confirmed in this study. There are several possible reasons for this. Firstly, the study population was small, and the difference in perception of the seriousness of the disease between the two groups may be due to the small numbers. This may have annulled an increase in compliance that would otherwise have existed (Becker and Maiman, 1975). A larger sample of about 200 patients would eliminate these problems. Morris and Halperin (1979) mention two studies in their review that did not reveal any improvement in compliance when written instructions were issued, beyond that of extra verbal advice. It is possible that the provision of written advice in itself does not improve compliance.

Conclusions

The results of this investigation have shown that it is possible to increase patients' recall of advice by the provision of written instructions. The effects on compliance, however, were less clearly established. Further research with larger numbers using various forms of written instructions is needed to discover whether compliance is improved and whether the increase in recall is sufficient to merit the production of printed instructions for patients in general practice.

References

- Becker, M. H. & Maiman, L. A. (1975). Sociobehavioural determinants of compliance with health and medical care recommendations. *Medical Care*, **13**, 10-24.
- Bradshaw, P. W., Ley, P. & Kinsey, J. A. (1975). Recall of medical advice: comprehensibility and specificity. *British Journal of Social and Clinical Psychology*, **14**, 55-62.
- Dunnell, K. & Cartwright, A. (1972). *Medicine Takers, Prescribers and Hoarders*. London: Routledge and Kegan Paul.
- Flesch, R. (1948). A new readability yardstick. *Journal of Applied Psychology*, **32**, 221-233.
- Haynes, R. B. *et al.* (1979). *Compliance in Health Care*. Baltimore: The Johns Hopkins University Press.
- Health Education Council Leaflet (1976). *Cystitis—What you Should Know About it*. London: Health Education Council.
- Ley, P. (1972). Towards better doctor-patient communications. In *Communication Between Doctor and Patient*. Ed. Bennett, A. E., Oxford: Nuffield Provincial Hospitals Trust, 75-96.
- Ley, P., Jain, V. K. & Skilbeck, C. E. (1976). A method for decreasing patients' medication errors. *Psychological Medicine*, **6**, 599-601.
- Ley, P. & Spelman, M. S. (1967). *Communicating with the Patient*, 26-90. London: Staples Press.
- Mayo, M. E. (1975) *Urinary Infections*. Update Postgraduate Centres Series, Ed. Marcus, A. London: Update Publications Ltd.
- Morris, L. & Halperin, J. A. (1979). Effects of written drug information on patient knowledge and compliance. A literature review. *American Journal of Public Health*, **69**, 47-52.
- Sharpe, T. R. & Mikeal, R. L. (1974). Patient compliance with antibiotic regimens. *American Journal of Hospital Pharmacy*, **31**, 479-484.
- Winer, S. (1979). Individual learning and the educator's role. *Audio Visual*, **8**, 117-125.

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Address for reprints

Victoria A. Gauld, 12 Earnle Road, Wimbledon, London SW20 0MT.

Ultrasound and pre-term infants

A linear-array real-time ultrasound scanner was used to examine the brains of all 95 infants born at less than 33 weeks of gestation who were admitted to the neonatal unit of University College Hospital in 1979. Abnormalities (cerebral haemorrhage or cerebral atrophy) were detected in 43 per cent. At follow-up later in the first year of life, only two of 53 infants with normal scans or minor haemorrhages had evidence of major neurodevelopmental handicaps, but five of 13 infants with more extensive haemorrhages or cerebral atrophy had major handicaps. Brain scanning with ultrasound in the first days of life identified most infants in the population studied who subsequently died or survived with handicaps severe enough to be detected within the first year.

The authors in their discussion make the following comments. There are four important implications. First, controlled trials can be done, much more easily than in the past, of interventions designed to prevent the common causes of death and major neurodevelopmental handicap in pre-term infants. Second, treatable lesions such as post-haemorrhagic hydrocephalus can be identified very early and their management conducted under ultrasound control. Third, as more information is obtained from the results of follow-up, it should be possible to identify, very early in life, most pre-term infants who are at especially high risk for neurodevelopmental handicap. Fourth, it will probably eventually become clear which infants are so hopelessly brain-damaged that intensive care can, if the parents wish it, be ethically withheld.

Source: Thorburn, R. J., Lipscomb, A. P., Stewart, A. L. *et al.* (1981). Prediction of death and major handicap in very preterm infants by brain ultrasound. *Lancet*, **1**, 1119-1121.