Evaluation of the Arthritis and Rheumatism Council Handbook on Gout

An objective study of doctor-patient communication

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Over the past few years the Arthritis and Rheumatism Council has produced a series of illustrated booklets in order to improve doctor-patient communication. Prompted by recent quantitative studies indicating poor recall among hospital patients (Ley and Spelman, 1965; Joyce, Caple, Mason, Reynolds, and Mathews, 1969), we felt that there was a need to test the efficacy of the booklet as a communication aid.

For convenience the 'Handbook on Gout' (ARC, 1967) was chosen for study as this is given routinely to all our patients with gout. Patients were tested on their ability to recall details from the booklet by means of a simple multiple-choice questionnaire.

Material and methods

A sample of 53 consecutive patients (48 males and 5 females) with classical gout were provided with the 'Handbook on Gout' during their routine attendance over a 3-year period at two rheumatology out-patients clinics (the General Infirmary, Leeds, and the Royal Berkshire Hospital, Reading). At this stage patients were simply asked to read the booklet but were not specifically told that they would later be tested on what they had read. This precaution was taken to obviate the artificially high scores which might have resulted from undue studying of the handbook.

At routine follow-up each patient was asked to complete a simple questionnaire (Appendix 1). This consisted of twelve multiple-choice questions based entirely on information from the handbook. All patients said they had read the booklet and all co-operated in completing the questionnaire. One patient was illiterate and in this case the questions were read and answers recorded by one of us (V.W.).

To avoid unnecessary stress, no definite examination time limit was imposed, and all subjects were allowed to sit the test in a private room.

The system of scoring was as follows:

- (a) 1 point awarded for correct statements ticked and incorrect statements not ticked,
- (b) 1 point subtracted for incorrect statements ticked and correct statements not ticked.

In order to study the pattern of recall in these patients the total score for each subject (Appendix 2) was related to the following variables: age, social grade, educational background, reinforcement (number of times booklet read), and time interval between reading booklet and examination. Furthermore, individual scores for each question were used to assess the effect on recall of learning order and graphic illustration.

Results

The results are divided into:

- (1) General distribution of test scores;
- (2) Correlation study of factors likely to influence recall;
- (3) Spontaneous reactions to the Handbook.

(1) GENERAL DISTRIBUTION OF TEST SCORES

(a) Distribution of overall test scores

The mean score was 70 per cent. and the range 35-93 per cent. The majority of patients scored more than 60 per cent.

(b) Distribution of individual question scores (Figure and Table I, overleaf)

The detailed results for each patient are shown in Appendix 2. The best-answered questions concerned pathogenesis and management of the injured joint (mean score 95 per cent.). The lowest scores related to questions on treatment of the mild attack (mean score 49 per cent.) and management during preventive treatment (mean score 56 per cent.).

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Table I *Distribution of test scores for individual questions*

Question no.	Nature of question on gout	Score	
		No.	Per cent.
1	Aetiology	179 212	84
2	Pathogenesis	152 159	95
3	Mode of drug action	123 159	76
4	Properties of uric acid	190 265	71
5	Clinical facts about gout	142 159	88
6	Management of injured joint	202 212	95
7	Precipitating factors	389 636	61
8	Treatment of mild attack	185 371	49
9	Treatment of severe attack	250 371	67
10	Preventive treatment	155 212	74
11	Rationale of treatment	111 159	68
12	Management during preventive treatment	151 265	56

Surprisingly, the mean score obtained for answers based on illustrated questions (66 per cent.) was significantly ($0.05 > P > 0.01$; $\chi^2 = 34.20$; d.f. = 1) less than the mean score based on unillustrated questions (78 per cent.). This paradox may be due to an apparent effect resulting from:

- (a) the fact that the cartoons illustrate only a fraction of each main question,
- (b) the fact that illustrated questions largely concern

Table II *Correlation table showing degree of relationship (correlation coefficient, r) between multiple-choice test score (per cent.) and age, social class, duration of gout, reading-test interval, reinforcement, and order of information*

Parameter	Age (yrs)	Social class	Duration of gout	Reading-test interval	Reinforcement	Order of information
Examination score (per cent.)	$r = -0.13$ $P > 0.10$	$r = -0.47^*$ $P < 0.001$	$r = -0.20$ $P > 0.10$	$r = -0.15$ $P > 0.10$	$r = +0.09$ $P > 0.10$	$r = -0.62^*$ $P < 0.05$

Statistically significant correlations are indicated *

FIGURE *Distribution of individual question scores*

details of management and treatment which on the whole scored less than other questions.

(2) CORRELATION STUDY OF FACTORS LIKELY TO INFLUENCE RECALL

Table II shows the degree of relationship between test score (per cent.) and the following factors:

- (a) Age (years);
- (b) Social class*;
- (c) Duration of gout (years);
- (d) Reading-test interval (months);
- (e) Reinforcement (number of times booklet read completely);
- (f) Order in which information appears in Handbook.

A statistically significant negative relationship was observed between the following:

(1) *Overall test score and Social class* ($r = -0.47$; $P < 0.001$), i.e. higher scores were obtained by Social Class I than by Social Class V;

(2) *Individual question score and Order in which question data appear in handbook* ($r = -0.62$; $P < 0.05$), i.e. questions based on information read first scored higher marks than questions based on data read last.

The other correlations were not significant at the 5 per cent. level.

* The Registrar General's classification (Davies, 1966) was adopted: Class I (professional); Class II (intermediate); Class III (skilled); Class IV (semiskilled); Class V (unskilled).

The importance of the influence of educational standard on test score was assessed by dividing the sample into two groups:

- (A) patients whose secondary education had not exceeded secondary modern school level (30 patients),
- (B) patients who had proceeded to grammar or public school (23 patients).

The results obtained by each group are shown in Table III. The score obtained by patients educated at a grammar or public school (Group B) was statistically ($P < 0.001$; $\chi^2 = 34.49$; d.f. = 1) greater than that obtained by patients educated at a secondary modern school (Group A), although the difference between them was only 10 per cent.

Table III *Distribution of test scores between educational groups A and B*

Group A (Secondary modern)		Group B (Grammar or public school)	
No.	Per cent.	No.	Per cent.
1141	65	952	75
1740		1260	

(3) SPONTANEOUS COMMENTS

It was felt worth recording that at least one-third of the patients spontaneously commented that they had considerably enjoyed reading the Handbook. A similar proportion much appreciated the explanation that gout is inherited and *not caused by drink*.

Discussion

Considering particularly the psychological and therapeutic importance of doctor-patient communication, it is surprising that the subject has received such scant attention in past years. Recently, however, a small number of valuable studies have been reported (Ministry of Health, 1963; Ley and Spelman, 1965 and 1967; Browne and Freeling, 1967; Joyce and others, 1969). The last of these is of particular interest in that it deals specifically with communication problems in a group of rheumatic patients. In the following discussion particular reference will be made to these studies in order to throw further light on the results of our own investigation.

Ley and Spelman (1967) have stressed the importance of written as opposed to verbal communication. An earlier study by these workers (Ley and Spelman, 1965) showed that patients forget as much as one-third of what is said to them. The evidence from our own study, represented by a mean test score of 70 per cent., substantially supports the value of written material as a communication medium. The high average score obtained by our patients may in small part be related to the higher intelligence of gouty subjects (Stetten and Hearon, 1959; Dunn,

Brooks, Mausner, Rodnan, and Cobb, 1963), although those with a secondary modern school education scored an average of 65 per cent. On the other hand, it is possible that a major part of the observed score is due to the written nature of the test material and the more relaxed conditions associated with this method of learning. In this context Ley and Spelman (1967) have clearly shown that very anxious patients recall considerably less than patients who are only moderately anxious.

Analysis of certain factors which might be related to the degree of recall showed, as might be anticipated, that a significant correlation existed between test score and social grade, and between test score and schooling. In other words, it was found that the highest test scores were obtained by patients of 'higher' social class and/or grammar or public school background. However, these observations are at variance with the results obtained by Ley and Spelman (1967); these authors concluded that intelligent patients remember no more than less intelligent patients.

With regard to our observation that patients performed best when tested on information they had read first, we are in agreement with Ley and Spelman (1967) who found that 'patients remember best what they are told first.' The practical implication of this observation is that in future editions of the 'Handbook' features of particular importance should be presented before less important information.

Somewhat disquieting was the general observation (also found by Ley and Spelman (1965) and Joyce and others (1969)) that patients tend to remember less about instructions on management and treatment than details of aetiology, pathogenesis, and symptomatology. In view of the fact that in some rheumatic disorders communication of therapeutic information is virtually the only form of treatment (Mason, cited by Joyce and others, 1969), this is clearly a problem requiring further study. Considering these facts and also the traditional pattern adopted by current editions of the ARC Handbooks on gout and other rheumatic diseases, perhaps a more educationally fruitful approach would be to modify this conventional order of presentation so that details of management and treatment are placed before less therapeutically relevant information. Additional prominence to this type of data might be achieved by more extensive use of Leslie Starke's excellent line drawings.

Our failure to observe any significant correlation between examination score and time interval between reading the booklet and taking the test is consistent with the results of classical studies. For example, Guilford (1939) showed that memory retention of fully comprehended material (in contrast to nonsense syllables) is almost perfectly retained for as long as a

month after the initial reading. (The study was not extended to study delayed recall for periods greater than one month.) Similar though less striking observations have recently been made by one of us (V.W.) in a study of delayed recall in medical students (Wright, Haslock, Ives, and Holroyde, 1971). We conclude, therefore, that once the booklet has been completely read and fully understood, retention of this information is likely to remain for some considerable time. Reference to Appendix 2 shows that, of the nine patients who were tested one year or more after reading the booklet, two-thirds scored at least 70 per cent, and one subject who was examined after 4 years scored 73 per cent.

Similarly, the lack of any definite relationship between test score and reinforcement (number of times handbook read) is consistent with, though not strictly analogous to, the results obtained by Krueger (1929). This worker demonstrated that after the elapse of a fortnight the amount of information recalled after 100 per cent. 'overlearning'* was only fractionally greater than when the same data had not been overlearned. Our results therefore suggest that in the majority of cases a single reading of the booklet is sufficient to provide a reasonable practical grasp of its contents.

Summary and conclusions

(1) A sample of 53 consecutive patients with gout was tested by means of a multiple-choice questionnaire based on the Arthritis and Rheumatism Council 'Handbook on Gout'. This was done (a) to test the value of the booklet as a doctor-patient communication aid and (b) to examine the effect of certain factors on the pattern of recall.

* If x trials are required to memorize material, $x + \frac{1}{2}x$ trials constitute 50 per cent. overlearning and $x + x$ 100 per cent. overlearning.

(2) The booklet was found to be highly satisfactory as a communication aid (mean test score 70 per cent.; range 35–93 per cent.). Furthermore, most patients scored more than 60 per cent. Details of management and treatment were remembered less well than information about the general nature of the disease.

(3) A statistically significant relationship was found between test score and (1) social status, (2) education and (3) order of learning. However, no relationship could be demonstrated between test score and (1) age, (2) duration of illness, (3) time interval between learning and examination, and (4) number of times Handbook read.

(4) It was concluded that:

- (a) Long-term recall of information based on the Handbook is well maintained for at least a year,
- (b) A single reading is sufficient in most patients.

(5) *It is suggested that:*

- (a) In view of the general value of the Handbook, all patients with gout should be issued with a copy of the booklet as soon as the diagnosis is established,
- (b) In future editions of the Handbook the most important information should be placed first in order of presentation,
- (c) More emphasis should be placed on details of management and treatment.

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Appendix 1 Multiple-choice questionnaire on Arthritis and Rheumatism Council Handbook on Gout (ARC, 1967)

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- (1) Is gout *caused* by: (a) Drink
(b) Infection
(c) Inheritance
(d) Unknown factors
-
- (2) Is gout (a) Due to too much uric acid in the body
(b) Due to too little uric acid in the body
(c) Neither of the above
-
- (3) Modern drugs used in the treatment of gout can: (a) Relieve gout pain
(b) Prevent arthritis developing
(c) Reverse damage in gout which has progressed to arthritis
-

- (4) The amount of uric acid in the system :
- Can be measured by a simple blood test
 - Is particularly useful as an index of progress in treatment
 - May be increased in relatives of gouty subjects who may not have symptoms
 - Can only be measured by complicated tests not usually available in general hospitals
 - Cannot be measured at all
-
- (5) Gout
- Only affects the big toe
 - Only affects joints other than the big toe
 - May affect the big toe as well as other joints
-
- (6) If you injure a joint and it becomes painful or takes longer to get better than you would expect you should :
- Accept this and do nothing as this is normal in a gouty subject and will do no harm
 - Seek treatment from your doctor
 - Treat yourself with household remedies only
 - Accept this and do nothing as there is no satisfactory treatment
-
- (7) Which of the following may bring on an acute attack of gout :
(a) Worry	(h) Excess alcohol
(b) Smoking	(i) Excess food
(c) Fatigue	(j) Starvation
(d) Surgical operation	(k) Heavy red wines rather than gin or whisky
(e) Injury	(l) Purine-rich food (<i>e.g.</i> offal and meat)
(f) Vegetarian diet	
(g) Vitamin deficiency	
-
- (8) In a mild attack one or more of the following may be sufficient treatment :
- Massage
 - Protection with a cage
 - Exercise
 - Hot poultice
 - Ice pack
 - Lead and opium lotion
 - Immobility
-
- (9) In a severe acute attack your tablets (*e.g.* colchicine, phenylbutazone, or similar preparation) :
- Should be taken at the beginning of an attack
 - Should be taken after the pain has been present for at least 2 hours
 - May be taken before the acute attack when some warning sign appears
 - Are effective in getting rid of uric acid only
 - Only relieve pain and have no action in preventing further attacks
 - Sometimes cause side-effects such as diarrhoea
 - Should never be taken without consulting your doctor, even though you may still have a supply given for a previous attack
-
- (10) Lifelong and regular preventive treatment :
- Prevents attacks of gout occurring
 - Prevents uric acid crystals being deposited in the joints and other parts of the body
 - Keeps uric acid flushed out of the system
 - All of the above
-
- (11) The main reason for ridding the body of uric acid is :
- Only because deposition of uric acid in the joints causes pain
 - Because deposition of uric acid causes permanent damage to the joints
 - Because uric acid lessens the patient's general feeling of well-being
-
- (12) During regular preventive treatment the following points are important :
- Drink plenty of fluids to assist flushing out the uric acid
 - Perform rigorous exercises to flush out uric acid in the sweat
 - Expect the frequency and severity of attacks to take a month or more before dying away
 - Visible deposits of uric acid in the skin will tend to become smaller
 - Avoid aspirin as this interferes with treatment

Appendix 2 *Test score and personal details of 53 patients*

Patient no.	Sex	Age (yrs)	Duration of gout (yrs)	Interval between reading and test (mths)	No. of times hand-book read	Social class	Education	Score		Individual questions (maximum points)											
								Overall													
								No.	Per cent.	1 (4)	2 (3)	3 (3)	4 (5)	5 (3)	6 (4)	7 (12)	8 (7)	9 (7)	10 (4)	11 (3)	12 (5)
1	M	68	32	$\frac{3}{5\frac{1}{2}}$	4	IV	A	44	73	4	3	2	4	3	4	9	4	5	2	1	3
2	M	68	24	1	3	V	A	36	60	3	3	2	3	2	3	7	4	5	4	0	0
3	M	47	8	12	1	II	B	51	85	4	3	2	5	3	4	9	3	7	4	3	4
4	M	52	10	$\frac{1}{5\frac{1}{2}}$	5	II	A	58	93	4	3	3	5	3	4	11	7	6	4	3	5
5	F	64	14	48	5	III	A	35	58	3	3	3	3	1	4	5	3	4	2	2	2
6	M	56	33	$\frac{1}{5\frac{1}{2}}$	2	IV	A	45	75	4	3	2	3	3	4	9	2	7	4	1	3
7	M	30	2	$\frac{3}{5\frac{1}{2}}$	1	II	B	53	88	4	3	3	4	3	4	10	5	5	4	3	5
8	M	41	2	$\frac{3}{5\frac{1}{2}}$	2	I	B	48	80	4	3	3	4	3	4	9	4	5	4	3	2
9	M	58	16	1	2	II	B	46	76	4	3	3	4	3	4	7	3	4	4	3	4
10	M	33	13	$\frac{5}{5\frac{1}{2}}$	2	I	B	37	61	4	3	2	3	3	4	6	2	4	1	3	2
11	M	56	3	1	2	IV	A	25	41	2	2	1	2	2	3	6	3	4	0	0	0
12	M	34	$1\frac{1}{2}$	12	2	I	B	55	91	4	3	3	4	3	4	11	6	7	4	2	3
13	M	55	15	48	3	I	A	44	73	2	3	2	4	3	4	9	1	5	4	3	4
14	M	40	$\frac{1}{2}$	3	1	V	A	32	53	2	3	2	2	1	4	6	3	1	4	2	2
15	M	39	12	12	1	II	B	42	70	3	3	2	4	3	4	7	4	4	4	2	2
16	M	57	12	$1\frac{3}{5\frac{1}{2}}$	2	II	B	40	66	4	3	2	3	3	4	8	3	3	1	3	3
17	M	51	12	$\frac{3}{5\frac{1}{2}}$	1	I	B	44	73	4	3	2	4	3	2	9	3	4	2	3	5
18	M	52	14	1	1	IV	B	38	63	3	3	2	3	3	4	7	2	4	4	1	2
19	M	52	20	$\frac{3}{5\frac{1}{2}}$	1	II	B	45	75	6	3	2	4	2	4	7	2	6	4	3	4
20	F	63	18	$\frac{3}{5\frac{1}{2}}$	2	II	B	47	78	2	3	3	4	3	4	9	3	7	4	2	3
21	M	79	30	$\frac{3}{5\frac{1}{2}}$	2	II	A	32	53	4	1	0	2	3	4	5	1	4	4	1	3
22	M	57	25	1	2	III	A	51	85	4	3	2	4	3	4	8	5	6	4	3	5
23	M	61	25	$\frac{3}{5\frac{1}{2}}$	2	III	A	52	86	4	3	3	5	3	4	9	4	7	4	3	3
24	M	60	$1\frac{1}{2}$	1	3	III	B	51	85	4	3	2	4	3	4	9	5	5	4	3	5
25	M	39	2	1	3	V	A	42	70	4	3	2	4	2	4	8	2	4	4	1	4
26	F	71	20	1	3	II	A	46	76	4	3	3	3	3	4	8	4	6	4	1	3
27	M	68	15	$\frac{1}{5\frac{1}{2}}$	2	III	A	29	48	2	3	2	2	1	4	4	3	4	1	1	2
28	M	41	1	3	6	III	B	54	90	4	3	3	4	3	4	8	7	7	4	3	4
29	M	65	5	3	3	II	A	53	88	4	3	3	4	3	4	10	7	5	4	1	4
30	M	54	5	$\frac{3}{5\frac{1}{2}}$	2	I	B	50	83	4	3	3	5	3	4	10	2	6	4	2	4
31	M	63	1	1	6	III	A	45	75	4	3	3	4	3	4	9	2	7	2	1	3
32	M	68	4	12	3	III	B	46	76	4	3	3	4	3	4	6	5	6	4	1	3
33	M	51	18	4	2	III	B	42	70	4	3	3	4	2	4	6	3	5	4	2	2
34	M	44	6	3	2	III	A	35	58	4	3	2	3	3	4	5	3	4	1	1	2
35	M	48	4	24	1	III	A	42	70	4	3	1	3	3	4	7	5	4	4	2	2
36	M	28	$\frac{6}{1\frac{1}{2}}$	3	1	III	A	45	75	4	3	2	3	3	3	8	4	5	4	3	3
37	F	78	$\frac{1}{5\frac{1}{2}}$	$\frac{1}{5\frac{1}{2}}$	3	II	B	49	81	2	3	3	5	3	4	8	5	5	4	2	5
38	M	66	$\frac{6}{1\frac{1}{2}}$	—	1	III	A	32	53	2	3	2	3	3	4	3	1	4	4	1	2
39	M	62	4	$\frac{3}{5\frac{1}{2}}$	12	V	A	37	61	4	3	2	3	3	4	5	3	4	1	3	2
40	M	59	15	6	6	II	A	39	63	2	3	3	4	3	2	7	3	6	1	2	3
41	M	39	—	3	1	V	A	22	36	3	2	1	2	3	3	8	2	3	0	2	1
42	F	57	23	—	1	—	A	21	35	2	0	2	3	1	4	5	3	0	1	0	0
43	M	52	7	1	4	II	A	41	68	2	3	3	5	3	4	7	1	6	2	2	3
44	M	64	21	24	2	—	B	24	40	4	3	2	3	1	2	6	3	0	0	0	0
45	M	64	12	36	3	—	A	38	63	4	3	2	3	2	4	5	6	4	0	3	2
46	M	67	10	1	2	III	A	45	75	4	3	2	4	3	4	6	3	5	4	3	4
47	M	54	10	2	3	II	A	36	60	2	3	2	3	3	4	6	3	4	1	3	2
48	M	36	6	3	4	III	A	39	65	1	3	3	4	2	4	6	4	4	2	3	3
49	M	31	$1\frac{8}{1\frac{1}{2}}$	18	4	II	B	42	70	3	3	2	3	3	4	7	4	4	4	3	2
50	M	33	$1\frac{9}{1\frac{1}{2}}$	3	3	III	B	48	80	3	3	3	3	3	4	9	3	6	4	3	4
51	M	62	1	$\frac{3}{5\frac{1}{2}}$	1	II	B	49	81	4	3	3	4	3	4	8	5	5	2	3	5
52	M	58	3	$\frac{3}{5\frac{1}{2}}$	1	V	A	37	61	4	3	2	3	3	4	6	3	3	1	3	2
53	M	64	15	$\frac{3}{5\frac{1}{2}}$	1	II	B	45	75	3	3	3	4	3	4	6	4	5	4	3	3

* Fractions refer to number of weeks
— signifies data unobtainable.

A=Secondary modern school
B=Grammar or public school

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