The Influence of Hospital Admission on Long-Term Medication of Elderly Patients

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There is a vast literature on the pharmacokinetics and pharmacodynamics of drug therapy in the elderly but the effectiveness of medication also depends on the patient taking the tablets. Poor drug compliance by the elderly is well recognised[1-3] and the reasons for it are not difficult to understand. The multiple pathology of old age encourages polypharmacy which in turn is associated with poor compliance[4,5]. For this reason most geriatricians claim that they cure as many patients by stopping drugs as by starting medication, although there is, in fact, little evidence that this is true. The elderly also tend to have impaired memory and often live alone, both factors affecting compliance. However, even when an effort has been made to educate the elderly about their drug regime it has been found[6] that not only did the older patients have less knowledge about drugs than their younger counterparts but they also did not benefit from tuition.

There is some evidence[3] that poor drug compliance is not entirely unintentional. It seems that many patients accept prescriptions to please their doctor rather than with the intention of taking the tablets. This, of course, does not apply solely to the elderly and probably accounts for the vast quantities of unwanted drugs recovered from patients’ homes[7-9].

Geriatricians take pride in sending patients home on as few drugs as possible, therefore providing the optimal conditions for good compliance. What we do not know is whether the patient, or for that matter the general practitioner, accepts the modified medication. Does the patient continue on the hospital prescribed drugs or does he return to his original prescription? If he does, is this his own or the GP’s decision? This study set out to assess the influence of admission to hospital on the long-term medication patterns of a group of elderly people.

Method and Results

Thirty-five patients (10 males and 25 females) discharged from two geriatric units in a large district general (teaching) hospital were included in the study. They were selected by random allocation, the only criterion for inclusion in the study being that they were returning to their own home or that of a relative. Prior to the discharge, one of us (J.A.) explained to the patients the nature of the tablets, the dosage and how long the medication should be taken. The patients were followed up at 2-3 weeks and then again at 6-8 months after discharge from hospital. By the time of the second follow-up 13 had either died or were no longer living at home. Particular interest was taken in the number of tablets as well as the number of drugs being taken, who dispensed the tablets at home, which drugs had been stopped and why, and whether new drugs had been started.

Results

Table 1 shows the number of drugs being taken at different stages of the study. It is of note that although four patients were admitted to hospital without drugs, all the patients were discharged on some form of medication and by the first follow-up two were again on no medication. As many as one-fifth of the patients were taking five or more drugs at the time of admission. There were still five patients (14 per cent) taking this number at the time of discharge and the number had increased to eight patients by the first follow-up.

Drug Alteration in Hospital

Table 2 shows the number of patients receiving individual drugs at different stages and indicates which were started or discontinued. The four commonest drugs stopped on admission to hospital were sedatives, diuretics, analgesics and antibiotics. Diuretics and analgesics were the drugs most commonly being used by patients at the time of admission and these drugs were stopped in about half of the cases. The drugs most likely to be discontinued were those which had an adverse effect on cerebral function, such as sedatives and anti-nauseants. The drugs most likely to be started in hospital were very similar to those which were stopped, the commonest being diuretics, analgesics and night sedation along with haematinsics, digoxin, potassium and purgatives.

Drugs after Discharge—First Follow-up

Of the patients 22 (63 per cent) returned home to live alone and an additional seven (20 per cent) lived with an equally elderly spouse. The rest lived with other members of the family. In most cases (80 per cent) the patients were
responsible for their own medication, five (14 per cent) had the medication dispensed by a relative living in the home and two were supervised by supporters from outside the home.

By the follow-up visit at 2-3 weeks after discharge 15 drugs had been discontinued: one (digoxin) by the GP, two (antibiotics) on advice from the hospital but the other 12 by the patients themselves. In no case did it appear that the patient had forgotten to take the tablets. Two were stopped because the patient felt that they were of no use (sedative and purgative) and five because the patient felt that he or she no longer needed them (analgesic, bronchodilator, sedative and antacid), one because of adverse effects (diuretic) and two because they ran out of tablets (diuretic and digoxin). In two cases, both on haematinics, the reason was not clear.

By this first follow-up visit 15 patients had started new drugs. Nine of these (diuretic, analgesic, sedative, purgative and antibiotic) were started by the GP, but six (sedative, trinitrin, Sinemet and bronchodilator) were restarted by the patient.

The patients were questioned about the dosage and timing of their drugs. Only 19 (54 per cent) understood all of the drugs, nine (26 per cent) understood some but not all, and five (14 per cent) did not understand any. It is of interest that the two patients with the most tablets (14-16 daily) understood all while the five who did not understand any were receiving less than 6 tablets a day.

As between those who understood all of the drugs and those who did not, no statistically significant results (t-test) were found for the age of the patient, mental test score, days in hospital, number of drugs on discharge or the number of tablets being taken.

Table 2. Pattern of drug modification throughout the study period.

| Drug state | On admission | Stop | Start | On discharge | Stop | Start | 2-3 weeks | Stop | Start | 6-8 months | Stop | Start |
|------------|--------------|------|-------|--------------|------|-------|-----------|------|-------|-------------|------|-------|
| Diuretic   | 13           | 7    | 5     | 11           | 1    | 0     | 1         | 4    |
| Potassium  | 4            | 1    | 3     | 6            | 0    | 0     | 2         | 0    |
| Digoxin    | 8            | 1    | 4     | 11           | 2    | 0     | 0         | 0    |
| Anti-angina| 1            | 0    | 0     | 1            | 0    | 1     | 0         | 0    |
| Antihypertensive| 1   | 1    | 0     | 0            | 0    | 0     | 0         | 1    |
| Vasodilator| 0            | 0    | 0     | 0            | 0    | 0     | 1         | 0    |
| Analgesic  | 17           | 9    | 4     | 12           | 1    | 1     | 3         | 7    |
| Sedative   | 5            | 4    | 3     | 5            | 1    | 4     | 1         | 0    |
| Anti-depressant | 2  | 0    | 0     | 2            | 0    | 0     | 0         | 1    |
| Anti-Parkinsonian | 1  | 1    | 0     | 0            | 0    | 1     | 0         | 0    |
| Anti-epileptic | 1  | 0    | 0     | 1            | 0    | 0     | 0         | 0    |
| Antibiotic | 3            | 3    | 1     | 1            | 1    | 1     | 0         | 0    |
| Cough linctus| 1    | 1    | 0     | 0            | 0    | 1     | 0         | 0    |
| Bronchodilator| 2   | 1    | 1     | 2            | 0    | 0     | 0         | 1    |
| Anti-nauseant| 3   | 2    | 1     | 2            | 1    | 0     | 0         | 1    |
| Antacid    | 1            | 0    | 2     | 3            | 0    | 0     | 1         | 0    |
| Purgatives | 2            | 2    | 4     | 4            | 1    | 1     | 0         | 0    |
| Haematinic | 1            | 0    | 7     | 8            | 1    | 1     | 5         | 1    |
| Vitamins   | 1            | 0    | 1     | 2            | 0    | 0     | 0         | 0    |
| Thyroxine  | 0            | 0    | 1     | 1            | 0    | 0     | 0         | 0    |
| Anti-diabetic| 0  | 0    | 1     | 1            | 0    | 0     | 0         | 0    |

Table 1. Number of tablets per day being taken by elderly patients at different stages throughout the study.

| No. patients | On admission | On discharge | 2-3 weeks post-discharge | 6-8 months post-discharge |
|--------------|--------------|--------------|--------------------------|---------------------------|
| No. drugs 0  | 4(11%)       | 2(6%)        | 1(5%)                    |                           |
| 1-2          | 14(40%)      | 15(43%)      | 12(37%)                  | 7(32%)                    |
| 3-4          | 10(29%)      | 15(43%)      | 8(23%)                   | 9(41%)                    |
| >5           | 7(20%)       | 5(14%)       | 8(23%)                   | 5(23%)                    |

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patient. All the drugs started by the patient were ones they had been taking at the time of admission but which had subsequently been stopped. Thirteen drugs had been stopped by 10 (45 per cent) of the patients—four by the GP, two by the hospital and seven by the patients. The reasons patients gave for stopping their own drugs were: no benefit in three (two analgesics and one sedative), adverse effects in one (diuretic) and ‘no longer needed’ in three (haematinic, analgesic and antacid).

Discussion

Drugs are obviously a major part of the management of any patient but there are problems in ensuring that the elderly receive the most appropriate medication and that they take it correctly. Although geriatricians preach the gospel of moderation in medication, and the geriatricians in the study hospital were no exception, it is obviously more difficult than is often thought to achieve this in practice. It is true that 48 per cent of the drugs patients were receiving on admission were discontinued, but they were replaced by an equal number of drugs which were possibly considered more ‘appropriate’. The major emphasis was on stopping drugs likely to disturb cerebral function; most of the drugs started were related to the cardiovascular system or anaemia, merely emphasising the reason for admission.

Within three weeks of discharge 12.5 per cent of the drugs the patient was sent home on had been discontinued and an equal number had been started. Doctors played only a part in controlling this change in medication, the patient being responsible for 80 per cent of the discontinued drugs and 40 per cent of the drugs started. As patients are only likely to take drugs from which they feel they benefit this finding emphasises the need to treat the patient rather than the pathology. A problem might arise if patients stopped taking drugs given for asymptomatic disorders but we found no evidence of this. Patients were more likely to stop taking the drugs for conditions with obvious symptomatology, e.g. sedatives, purgatives, analgesics and bronchodilators.

Although none of the patients seemed to have stopped drugs because they forgot to take them, a large proportion of patients did not understand the dosage or timing of at least some of their drugs. Whether this can be overcome is debatable. Certainly other studies\[6\] have shown how difficult it can be to train elderly patients to understand their medication. This difficulty can only be overcome if supervision of medication, either by members of the family or with professional help, is improved. One of the problems is that district nurses are reluctant to visit the patient only to supervise medication, an impossibility when drugs are to be taken several times a day. It would seem obvious that drug therapy should be kept simple, with as few tablets as possible being taken. It is, however, of note that all of those who did not understand any of their drugs were those taking the fewest tablets, and both of those taking the largest number of tablets understood all of them. This may simply indicate that efforts had been made to control the number of tablets in those most at risk of non-compliance.

The high mortality at the late follow-up is an indication of the genuine degree of illness present and probably explains the high medication rate. There continued to be changes in drug medication among the survivors which, even at this late stage, were still largely influenced by the patient. New drugs were mainly prescribed by the GP, although some patients had reverted to drugs they had been taking at the time of admission to hospital. Drugs which were discontinued were as likely to have been stopped by the patient as by doctors.

It appears that geriatricians may not be as successful at decreasing the number of drugs being taken by elderly patients as they might think. Even within a very short period following discharge from hospital, patients may either discontinue or start drugs and therefore much well intentioned modification of medication is of limited value. With such a large amount of drug modification taking place over a relatively short period, it would seem important that hospital doctors and GPs have good methods of communication. It would also seem that closer contact with the patient, possibly by a health visitor, is required if drug compliance is to be achieved.

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