

PRACTICE ORGANISATION*The use of an addressograph system in general practice*

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Thirty-five years ago the final examination for the pharmaceutical chemist included the reading of test prescriptions with the object of proving the examinee's ability to decipher the most illegible writing with which he might expect to be faced during his professional life. Four years later this test was no longer presented to the candidates for the chemist and druggist qualifying examination. However, there still remained a degree of pride in the ability to decipher the orders from those who could lay more claim to art in medicine than calligraphy.

Times have changed and the chemist today has to dispense a far larger number of prescriptions from among a wider variety of drugs and pharmaceuticals. In addition, during the last 17 years the number of dispensing chemists has fallen by 3,111.

The next development is already seen in some parts of the country where the pharmacies are clustered around health centres. Thus the chemist will have more dispensing to do. Efficiency will increase accordingly as need arises. In this situation legibility of prescriptions is important. The prescription that is illegible or ambiguous wastes time for the chemist that could be spent in dispensing, and wastes time for the doctor should clarification be sought via the telephone. The answer is obvious to everyone in that the printed word must replace the written word. The problem is to achieve this without imposing extra work on the doctor. This method was adopted with the object of saving doctors' time, and the motive now is to help the doctor further by ensuring the expansion and development of the system in the future.

The addressograph system was selected after looking at several methods of printing and reproducing prescriptions with the names and addresses of patients. Finally, three were selected for critical evaluation and what at first appeared to be the second choice proved to be the most attractive because of its inherent potential for further development.

It is historically interesting to record that the first exhibition of the basic method was held over eight years ago during the course of a 'spot-diagnosis' evening at the Coventry and Warwickshire hospital. An exhibition was held in March 1972 at the Royal College of General Practitioners. Interest and encouragement were received at an early stage from the Department of Health and Social Security.

Method*Preparation of the master card.*

The first step in general practice is the production of a list of the names and addresses of all patients. The list is then used by the operator of the embossing machine. The embossing machine produces patient details on a blank piece of plastic card. The single-handed doctor would choose to have this done by the manufacturer, but a group of doctors could reduce costs by buying their own machine and embossing the blank cards on the practice premises. The details usually included on the card are the surname, one forename and any initials plus the address. There is a good case for using the National Health Service number rather than the address, though the present legal requirements for prescriptions would need altering.

A practical point that can be mentioned here is that the untrained typist may well produce 100 names and addresses per hour whereas a professional typist may achieve a rate of twice this number.

Experience has shown that the most useful place to fix the embossed card is at the top of the left hand corner of the EC7 or EC8 which is in current use. The card is firmly and easily attached with the aid of twin-stick adhesive tape. As the name implies the tape is adhesive on both sides.

Use of the master card

The master card comes to hand quite naturally when the medical record is used during the course of a surgery consultation. The details of the patient can then be printed on each form

that needs the information. The actual printing is achieved by the use of one of two machines. The 'cardoplate 520' addressograph machine operates by a simple press action while the second one operates by the action of a roller. The latter machine by virtue of the distance covered by its traverse can imprint all the details from two or three plastic cards at once, the second and third card carrying details of selected prescriptions. As already indicated the form that the addressograph prints details on most frequently is the EC 10 prescription form. The same details can equally well be added to any other form, letter, envelope or specimen label.

Discussion

The following calculations are based on actual timings taken with a stop watch graduated in minutes to the second decimal place instead of seconds. Times are averages calculated from several random samples of names and addresses and prescriptions. The results are not to be regarded as a time and motion study, but do illustrate the point that is to be made.

It was found that the time taken to write the name and address averaged 0·16 minutes, against a time of 0·04 minutes using the addressograph 'cardoplate 520' machine. In practice this time can be bettered whenever the embossed card is used more than once for the same patient for once the card is in the machine then the time taken to insert the card is saved for every printing after the first. The roller type machine can carry out two or three printings at once so that the name and address and one or two prescriptions would take very little more time to print than the time taken by the 'cardoplate 520' just to print the name and address.

The saving this system might make would have been equivalent to three per cent of the total doctor force for England, Scotland and Wales. From the human stand-point these figures are not so impressive as the gratitude from patients who are quick to appreciate the more leisurely and profitable surgery consultations.

The Future

There are two separate and yet related lines along which the present system may develop in the future.

Immediate applications

One line leads to the full utilisation of the system as it exists at present. Here it would be hoped that the embossed plastic card would be produced at the same time as the medical records were originated at the offices of the local executive council. The card might be used as at present and be attached to the medical records or be used as the basis for a more permanent and durable medical record card for the patient.

If used as a medical record card it could still be used as outlined above on the 'cardoplate 520' machine for printing patient details wherever required and at the same time it could serve the same purpose for chemists, opticians, dental surgeons and possibly hospital staff now that the Health Service is in the process of being unified. The standardization of all forms to accommodate the patient details at the same part of the form, such as the top left-hand corner, would be a major advance. There would be an advantage in using the National Health Service number rather than the patient's address. In this way the life of the card would be extended almost indefinitely, except for the occasion when the surname is changed as when a single woman marries, or a child is adopted. It would be useful if the date could be printed at the same time as the patient's details. A case can be made for the automatic enumeration of prescriptions, so that it is possible to check the official figures issued as prescribing cost analyses. This feature could easily be built into the machine used for printing from the embossed cards. Looking to the future it is possible that there would be no need for the prescriptions forms, for the machine could be loaded with a roll of blank paper and all details could be printed during the production of the prescriptions for the patient. The precedent has been set for this in the printing machine for bus tickets.

Computer applications

The second line along which the system can develop is into the computer field. In commerce store control and credit control data are being carried on plastic cards that as well as being embossed carry a strip of magnetic tape—mag-stripe.

The mag-stripes can carry data on a short or long-term memory basis, the characteristics

of the magnetic tape being suitable for permanent data or data or information that will only need recording for a relatively short period of time.

Some details such as patient identity, blood groupings, allergic history and some details of medical history would be considered for permanent recording, whereas prescriptions, codes for accounting for the pricing bureau would be carried on tape designed to have shorter memory characteristics.

The whole problem of 'ghost patients' would disappear if the validity of a patient's medical card and entitlement to treatment was for a limited period and required magnetic up-dating from time to time. No patient could inflate a list when this arrangement existed.

The medical certificate as we know it could be accommodated in the same way on mag-stripe.

The card as envisaged in this second stage of development would be loaded with the more permanent data at the point of origin, probably the executive council offices, and then prescription codes and possibly the price code would be added at the surgery desk.

Machines already exist that can record on these mag-stripes and can also read them and produce a print-out on paper if a printed record is required at any stage. The doctor could have a record for local use, or the chemist if a need arose. More usually it would be expected that a machine would 'read' the mag-stripe and an automated dispenser could deal with the more popular prescriptions, a print-out would be available to the chemist for the other prescriptions.

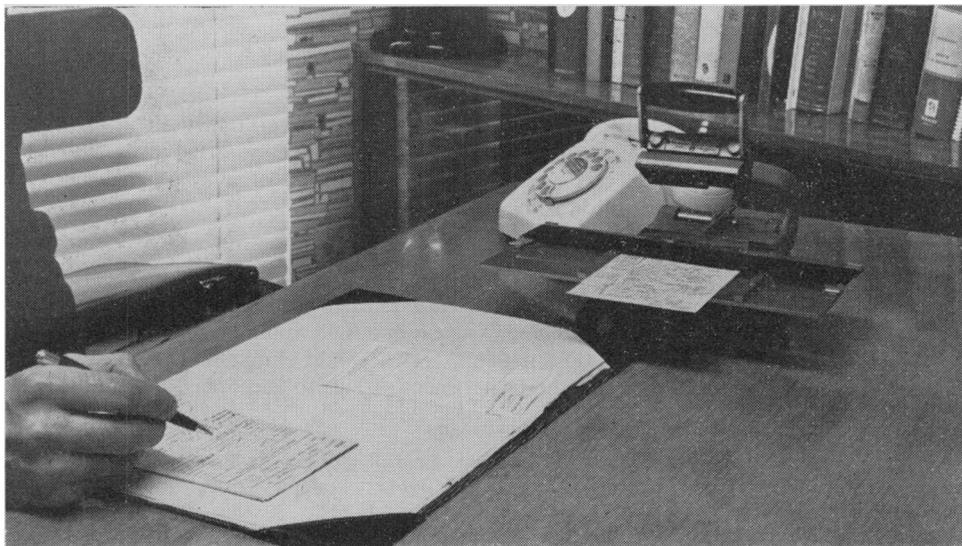


Figure 1
Model 'Cardoplate 520' addressograph machine in use.

The machine at the pharmacy would be on-line to a central computer and allow automatic pricing of the prescriptions and allow instantaneous credit to the chemist of the fees for his dispensing services. At present the chemist may have to wait three months before being paid. The pricing bureau will have already received all its statistical data for accounting so that auditing will be in line with modern commercial practice in that it would be current rather than historical.

These developments would release the full professional skills of the chemist so that he could play a more active role in the health team of the future. We have a great need for expert help in supplying up-to-date information on such subjects as drug formulation and drug incompatibilities. Progress in medicinal chemistry is rapid and more and more will require doctors and chemists who have had time released from routine paper work and dispensing procedures to give thought to the problems that need a joint effort to solve them.

Computers already serve many hospitals and some general practices, so that it is high time that careful attention is given to the best way in which they may serve doctors and patients throughout the country. General practitioners and only general practitioners can know what help is needed at the desks in their consulting rooms. I believe that mag-stripe offers the more versatile medium which would be of use throughout all the areas of health care in which a patient may be. It is also compatible with ordinary physical means of record keeping, and with other types of computers and computer recording.

Summary

An application is described for the addressograph system in general practice that can now make a major contribution to the production of legible prescriptions, with great saving in time and energy.

It is suggested that this system is ready to carry data for computer use merely by the addition of magnetic tape (mag-stripe) to the back of the embossed plastic card. The following could then be achieved:

1. Recording of patient identity.
2. Recording of vital medical history, such as blood group, steroid therapy, allergic diatheses.
3. Key control of access to central computer bank of medical history by patient's number or specific code. This could ensure confidentiality.

Insurance companies might pay for the use of the key, and spare the busy doctor the need to write a personal medical attendant report. The fee would be to reimburse the doctor for the time taken in keeping the records. The patient would hold the key.

4. Prescription 'writing' on mag-stripe.
5. Prescription monitoring as the prescriptions are produced so that the computer at the central records could inhibit any request for a drug that was contra-indicated in the light of the history and record of drug allergy or the record of the current use of some other drug or substance with which the new prescription is incompatible.
6. Automated dispensing with computer auditing and accounting which is current not historical in concept.
7. A Mag-stripe carrying record of a patient's entitlement to medical care under the National Health Service valid for say a period of a year at a time would limit the degree to which doctors' lists could be inflated by 'ghost patients'. This would eliminate a problem that has concerned both executive councils and the Department of Health and Social Security.

REFERENCES

- Dodd, K. N. (1969). *Analogue Computers*. London: English Universities Press.
 Hargreaves, J. (1967). *Computers and the Changing World*. London: Hutchinson.
 London, K. (1968). *Introduction to Computers*. London: Faber.
 Shelley, R. (1971). *Computer Programming*. London: English Universities Press.
 Tarr, J. C. (1965). *Good Handwriting*. London: Dent and Sons.

UNWANTED PREGNANCY

In 1971 about 4,000 girls under the age of 16 became pregnant.

UNWANTED PREGNANCY

In 1971 over 2,600 legal abortions were carried out on girls under the age of 16.

UNWANTED PREGNANCY

In 1971 about 1,350 girls under the age of 16 gave birth.

UNWANTED PREGNANCY

In 1971 there were about 20,000 illegitimate births in girls aged 16 to 19 inclusive.