

WORK STUDY IN GENERAL PRACTICE

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WORK study started in America in the early part of this century (Gilbreth and Gilbreth, 1917) and is now used by many large industrial concerns, of which one of the best known in this country is the I.C.I. (*Outline of Work Study*, 1955). There was considerable antagonism to its use at first, both from management and labour, but this has lessened since it was realized that work study could make the performance of the work easier, and by raising production could often lead to increased earnings. Work study teams have been formed by the Ministry of Health for work in some hospitals, and some reports have been published (*Hospital O and M Reports*).

This report is concerned with work study in general practice, and its application by an individual practitioner. It is designed to show the principles of work study, and to give some illustrations of its use.

The standard method of approach to work study which can be applied to any situation is:

1. To select the work to be studied
2. To make a record of this work
3. To analyse the work critically
4. To work out a new method
5. To test the new method

There are a number of different techniques for recording work which may be of use in different circumstances. Crombie and Cross (1956) measured the time spent over one year in practice, and it is useful to do this over a week to get a broad idea of the way in which one's time is spent. An analysis of one week is shown in figure 1.

The numbers on the diagram are the numbers of patients seen in the relevant time. It will be seen that if the time travelling is added to that spent visiting it takes almost three times as long to see a patient at home as at the surgery—18 minutes compared to 6.3 minutes on average over the week. The 'unaccounted for' time includes taking blood up to the hospital, talking to pathologists and

partners, reading and writing letters, having coffee and making up the day's visiting list, but it does not include telephone calls, syringe sterilizing, reading, or any other work done at home.

One of the difficulties about doing work study oneself is that making the observations is secondary to doing the work. Care has to be taken that as little interference as possible is caused to the work, and that the time taken in making the observations does not become an appreciable factor. One method of doing this is to tape record a surgery session, and to analyse the results at leisure afterwards.

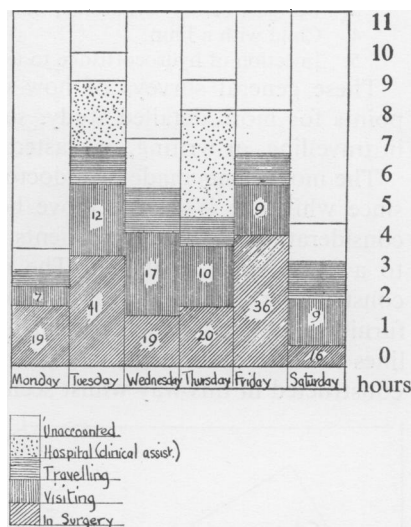


Figure 1
An analysis of one week

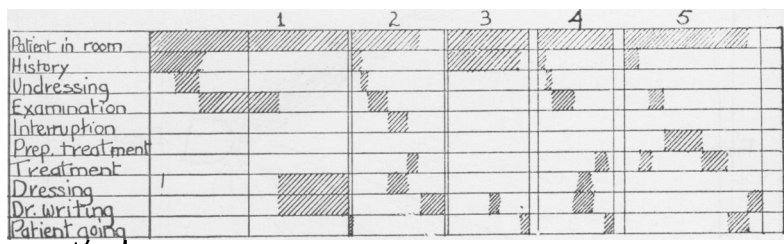


Figure 2
An analysis of time spent in examining five consecutive patients
Scale | 0 | 5 | 10 | minutes

An example of this is shown in figure 2 in which the use of time when seeing five consecutive patients is analysed: time is used in nine separate ways, which are mostly self-explanatory. 'Prep. treatment' is getting dressings or injections ready, 'Treatment' includes explanation or advice from the doctor, and 'Patient going' covers that final word from the departing patient about the weather or the wife's corns. It can be seen that so far as possible time is saved by taking part of the history whilst the patient is undressing, and by writing notes and prescriptions whilst he is getting dressed.

A brief description of the cases is given:

1. Pain in the chest—nil found
2. Vague abdominal pains after feverish cold

3. Postgastrectomy syndrome, waiting for hospital admission
4. Child with a limp
5. Injection of hydrocortisone to tenosynovitis of wrist

These general surveys of how one's time is spent may suggest points for more detailed study, such as how to reduce time spent in travelling, or writing, or wasted during surgeries.

The movements made by a doctor during a surgery are of interest, since whilst he is on the move he is probably wasting time, and consideration of these movements illustrates the standard approach to a work study problem. The movements may be recorded by constructing a diagram of the consulting room with its essential furniture and, after each patient has left, marking on the diagram lines to show movements made away from the chair. Figure 3 was constructed in this way whilst seeing 45 consecutive patients.

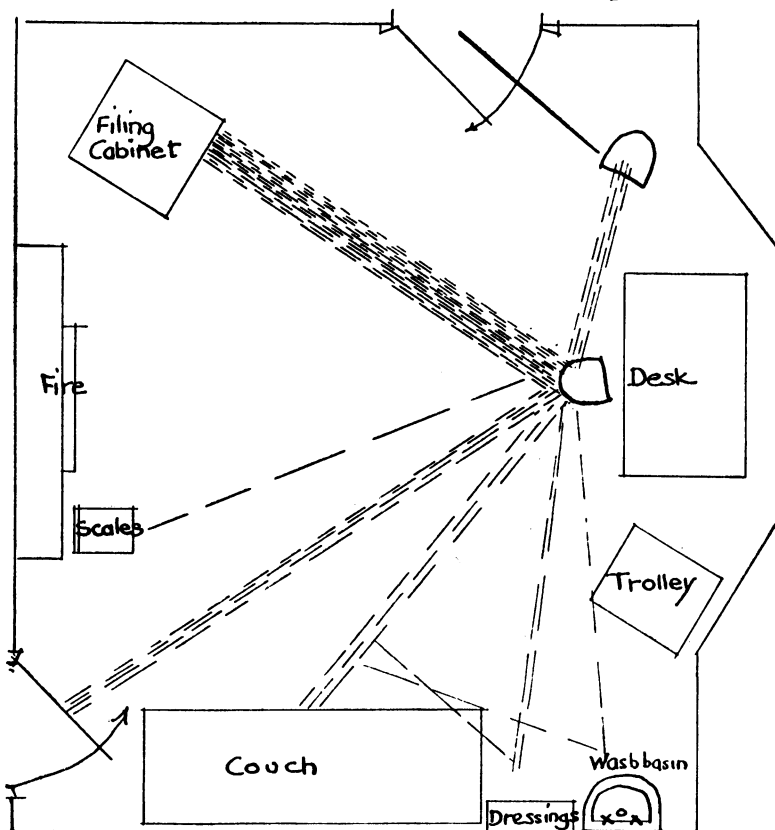


Figure 3

To-and-fro movements made whilst seeing 45 consecutive patients.

Scale 0 1 2 feet

To-and-fro movements are shown once only, for clearness, and the path taken by the patient coming into the room is shown by a solid line.

Looking at the diagram critically, it can be seen that:

1. Having the desk at the side of the room means a long walk to any other part of the room.
2. There is no privacy for the patient to undress.
3. The path of greatest movement is to the filing cabinet, although only 11 cards have been looked at for 45 patients.
4. It has been necessary to leave the room too often. The reasons for this were—
 - (a) to allow female patients to get undressed
 - (b) to test urines
 - (c) to boil syringes

The relation of the consulting room to the other rooms will help in deciding how to rearrange the room, and this is shown in figure 4.

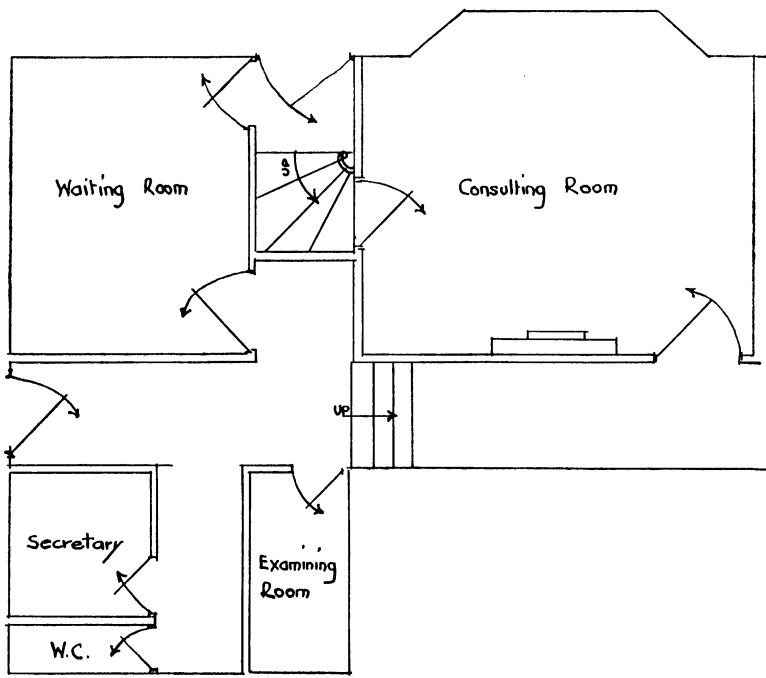


Figure 4
Ground plan of surgery unit

Scale: $\frac{1}{4}$ in. = 1 ft.

A second secretary would obviously be a great help, but this is not yet possible because of lack of space. The consulting room could be rearranged by shutting off one door, and making a division in the room to provide undressing and examination space. This would not need to be completely separate since the difficult or corseted patient could still go to the separate examination room. The desk could then be arranged more centrally against the

partition, and the doctor's accessories can be concentrated around him.

A flow diagram constructed whilst seeing 39 consecutive patients, after making the suggested alterations, is shown (figure 5).

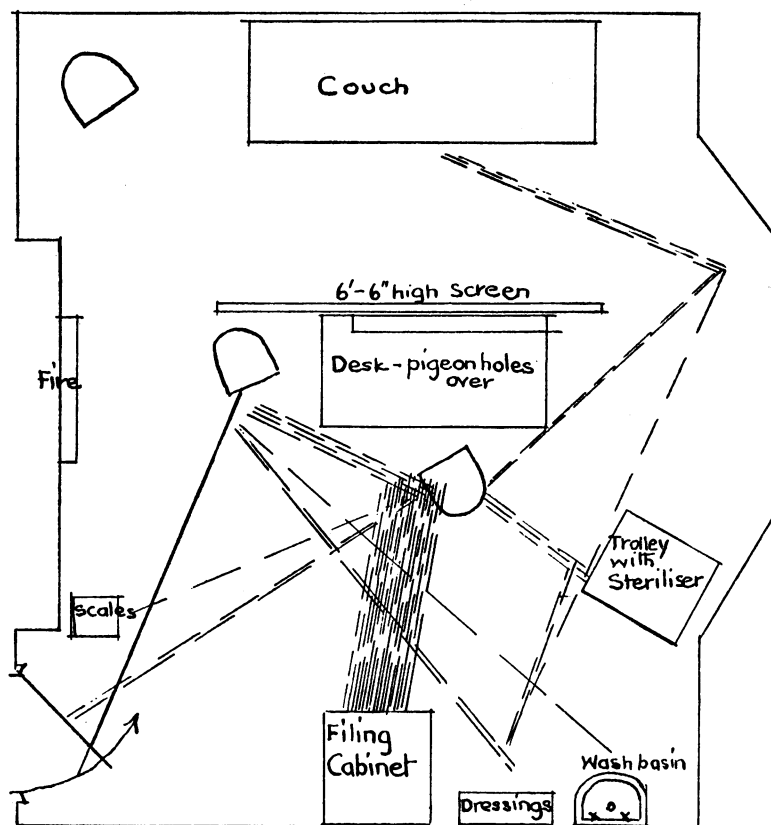


Figure 5

To-and-fro movements seeing 39 consecutive patients after rearrangement of consulting room

Scale: 1 cm. = 1 ft.

The distance moved has been successfully reduced, but the flow to the filing cabinet has increased: this reflects the easier accessibility of the cabinet, and emphasizes the need for another secretary. The partition screens patients when they are undressing, so that the doctor can stay sitting, and a small electric sterilizer saves him leaving the room so often.

"Concentrating the doctor's accessories around him" raises the question of which of these are most frequently used, and where

they should be positioned. Table I shows the papers and instruments used in seeing 60 consecutive patients, and the frequency of use.

TABLE I
THE PAPERS AND INSTRUMENTS USED IN SEEING 60 CONSECUTIVE PATIENTS

<i>Papers</i>	<i>Instruments</i>	
Prescriptions .. 36	Stethoscope .. 9	Syringe, needle 1
Certificates .. 10	Sphygmomano-	Proctoscope .. 1
Writing paper 2	meter .. 6	Scales .. 1
Envelopes .. 2	Auriscopes .. 6	Fingerstall .. 1
	Spatula .. 3	Sahli apparatus 1
	Torch .. 3	
	Ear syringe .. 2	

With this information the working space can be arranged to the best advantage—prescriptions and certificates should be near the pen hand, the more frequently used instruments within reach of the doctor when sitting, preferably below shoulder level, and speculae and fingerstalls kept near the examination couch.

A similar method can be used to decide what can most usefully be carried on visits, avoiding the annoyance of having to go out to the car to get something that has been left there, or the other extreme of carrying everything always—in Taylor's phrase "the comprehensive bag is all very well for the young G.P. still full of life and vigour, but after the first coronary thrombosis it loses much of its attraction" (Taylor, 1954). The instruments and papers used at each visit are noted over the course of one or two weeks, and a pattern of usage can soon be seen.

TABLE II
INSTRUMENTS AND PAPERS USED ON VISITS OVER TWO WEEKS

Prescriptions .. 36	Envelope .. 2	Albustix .. 1
Stethoscope .. 32	Speculum .. 2	Ear probe .. 1
Sphygmo. .. 15	Ovum forceps 2	Diet sheet .. 1
Torch .. 5	Nasal forceps 2	Tab.: ..
Auriscopes .. 5	Bandage .. 1	Franol .. 1
Syringe .. 5	Scissors .. 1	Cyclobarb. .. 1
Certificates .. 3	Ophthalmoscope 1	Injection:
Writing paper .. 3	Fingerstall .. 1	Penicillin .. 1
Spirit swab .. 3	Occultest tab. 1	Pethidine .. 1
Patella hammer 3	Clinistix .. 2	Largactil .. 1
		Ergometrine 1

The majority of messages from patients give some details about the illness, so that the instruments used for a miscarriage and a nosebleed, or other emergencies, could be kept in an emergency bag which could be carried when needed. The other papers and instru-

ments could be kept in a 'daily' bag, which would be as small as possible, and not too bulky to get in and out of the car easily. It is relevant to consider what is involved in getting out of a car.

TABLE III

SEQUENCE OF EVENTS WHEN GETTING OUT OF 2-DOOR CAR WITH STANDARD
'BLACK BAG' BEHIND DRIVER'S SEAT

1. Ignition off	6. Right hand tilts seat forwards
2. Right hand opens door	7. Left hand picks up bag
3. Right foot out, body turning inwards	8. Bag lifted out, body straightening
4. Left foot out	9. Seat dropped
5. Stand up	10. Turn away, right hand shutting door

Average time for sequence 8·3 seconds

If the 'daily' bag is narrow enough to pass through the 4 to 6 inch gap between the back of the driver's seat and the door frame movements made in lifting the seat could be avoided. If an aneroid sphygmomanometer is used instead of the mercury type all the commonly used instruments and papers will fit into an ordinary brief-case measuring 10 inches by 15 inches, and this is small enough to pass through the gap behind the driver's seat. This means that one is carrying 6 lb. instead of 15 lb. and with the 35 per cent saving in time when getting out of the car, there is a considerable saving in energy over the course of a day.

Table IV shows how the amount of movement has been reduced by not having to lift the car seat.

TABLE IV

SEQUENCE OF MOVEMENTS WHEN GETTING OUT OF 2 DOOR CAR WITH 'DAILY
BAG' BEHIND DRIVER'S SEAT

1. Ignition off	5. Stand up, right hand grasping bag
2. Right hand opens door	6. Move away, left hand shutting door
3. Right foot out, body turning outwards	
4. Left foot out, right hand falling to bag	

Average time for sequence 5·4 seconds

When an appointment system is being considered it may be of interest to assess how long patients have to wait at the moment, and to find out if appointments would be popular with patients. A method of charting the waiting time, compiled by an observer

sitting in the waiting room, is shown in figure 6.

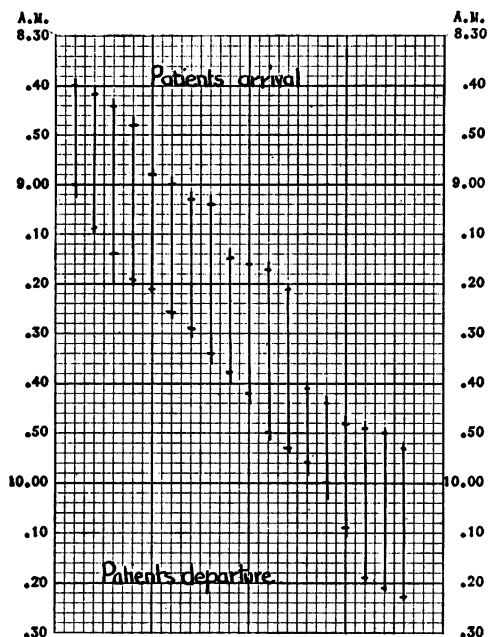


Figure 6.

The time spent by patients in the waiting room

This shows the flow of patients into the waiting room, the waiting time, and how long it takes for each patient to be seen.

Over eight surgeries the waiting time varied from none to 45 minutes, with an average time of 18 minutes. Of 122 patients questioned, 99 were in favour of appointments and 20 were not in favour. Many of these 20 were old-age pensioners who felt that they could not cope with the complications of making appointments.

Discussion

In industry work study is useful in reducing waste—whether of time, movement, material or money. There is a feeling among practitioners in this country that there is too great a pressure of work, although the relationship between income and amount of work demonstrated by Peterson *et al.* (1956) in North Carolina tends to be ignored. Work study provides a way for those willing to take it of using time to the best advantage.

Previous studies of the use of time in general practice (Crombie and Cross (1956), Mair and Mair (1959), Wood (1960)) have been observational: this is the first step to work study, and is the start of

initiating changes. There is obviously no general formula that can be applied to all practices, but the standard method of approach can be applied to different practices and problems.

Work study in general practice can be applied to the three main phases of work.

First—outside the surgery. The major time-wasting factor is driving, and in the week shown in figure 1, this accounted for 14.5 per cent of the whole week's work. Stevenson (1964) has shown that revisiting can be reduced by assessing the need critically, and now that so many people have cars, we may be able to persuade more patients to attend the surgery. To save the patient's time it may be necessary to provide car parking space and appointment systems, but this should be well worth while, since in the future driving will take even longer. Minor points that may save work are the size of bags, and what we have in them, and the methods of noting calls and revisits.

Second—in the surgery, away from the patient. The major factor is the amount of ancillary help that can be used usefully and economically, and the design of the premises to reduce walking. Minor points are whether to have disposable or boilable syringes, whether to use stick tests or boiling tests for urine, and to have some way of handling the telephone and records to save the practitioner work.

Third—in the surgery, with the patient. The analysis of the tape recording shown in figure 2 shows what is happening, but not how effective it is. In general the doctor should not talk for longer than the patient, but whether one treatment or another is better, and so saves the patient returning more often, only long-term follow-up can show. The minor points of how the consulting room is arranged, and positioning of papers and instruments to reduce movements are important since they stop distraction from the patient, and give us more time to give to him.

We may not have considered preventive medicine enough as a method of saving work: if we can persuade a man to give up smoking we may save many visits when he would otherwise be dying of his carcinoma of the lung.

Summary

The use of work study in general practice has been discussed, and some of the techniques of work study have been illustrated in re-organizing a consulting room, and in deciding what should be carried in a 'daily bag'. The way in which time is spent during the week and when with the patient is also described to illustrate the basic methods of work study, which are:

1. To select the work to be studied
2. To record the work

3. To analyse the work critically
4. To work out a new method
5. To test the new method.

Work study offers a method of using time and effort more economically.

Acknowledgements

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APPENDIX

- Author*: Some background facts to this practice. Born 1928. Qualified London 1955. In practice 1958.
Practice: In North Herts. market town, population 25,000. Four partners in practice, each looking after their own patients.
Author's practice: (Jan. 1964). 3,049 patients; 8 per cent over 3 miles from surgery. Services per patient—3.04.
 Attendance/visit ratio—2.93 : 1 (1963).
 Percentage of practice over 65 — 17.

Survey of Mental Illness in General Practice. C. A. H. WATTS, *et al.* *Brit. med. J.* 1964. **2**, 1351.

In this report records from 261 general practitioners with over a million patients 'at risk' are analysed in an attempt to estimate the incidence and prevalence of mental disablement in the community. The survey covers the 12-month period November 1961—October 1962, and it was found that just under one per cent of the patients at risk were mentally disabled. The criteria adopted were fairly stringent, so that minor and short-lived psychiatric illness was, in the main, excluded and the patients reported were, relatively speaking, seriously incapacitated.

The most common diagnosis was manic-depressive psychosis, accounting for about 25 per cent of the total. Mental illness tended to increase with age and in old age it was found that manic-depressive psychosis was as common as senile dementia. The only major difference noted between England and Wales (147 practices) and Scotland (114 practices) was that alcoholic addiction as a cause of mental disability was twice as high in Scotland as south of the border.