THE FLOW OF MEDICAL INFORMATION IN HOSPITALS

Published for the Nuffield Provincial Hospitals Trust
by the Oxford University Press

The flow of medical information in hospitals

A Report of a study commissioned by Nuffield Provincial Hospitals Trust and undertaken by English Electric Leo-Marconi Computers Limited.

Published for the Nuffield Provincial Hospitals Trust by Oxford University Press 1967.

London New York Toronto

Oxford University Press, Ely House,
London, W. 1.

Printed in Great Britain by
Whitefriars Press Limited
London and Tonbridge

Contents

Preface

The flowchart is a convenient and readily understandable device for presenting the steps in a process in visual rather than narrative form. Long familiar to commerce and industry as a tool of analysis, its use in the health services has hitherto, as a rule, been restricted to the employment of an allied technique, critical path analysis, in the building programmes of hospitals. The purpose of the project here reported was to test the practicability of applying flowchart techniques to other hospital procedures - in particular, to the information flow concerning the patient. Based on study of activities at two general hospitals, the flowcharts on the following pages record the procedural steps in the overall organisation, and in a number of the specific tasks relating to a patient's stay in hospital.

To attempt, in this way, to develop a method for outlining procedures seemed useful for several reasons. Those involved in the present exercise have found that the flowchart method of analysis imposes a worthwhile discipline on their thinking; that it is a great aid to planning the streamlining of procedures; and that it is an important means of achieving clear discussion amongst nursing, technical staff and medical staff as well as of teaching those who are unfamiliar with the systems in operation.

The method would seem worth using periodically as a means to reassess current procedures. Superfluous or even deficient procedures tend over a period of time to intrude themselves on even the best run institutions. It is important to realise that the effort put into its preparation will not be fully exploited unless it is followed by further study in depth of each point in the system undertaken either with the object of improving the existing procedures or of introducing new techniques.

Among new techniques the introduction of automatic data processing in any part of a hospital's information system would seem to require the employment of flowchart technique as an essential first step in planning. It facilitates a critical and objective look at current procedures which will then need to be analysed, step by step, so as to record the precise content of each item of communication and the responsibility for its origin. This in turn should lead towards a synthesis of the whole process and finally to the preparation of a flowchart comparable to that first produced and showing clearly where each essential step in the old system fits in with the proposed new system. This second stage analysis, the more difficult part of the process, is not attempted in the present volume but, it is hoped, will be illustrated in a subsequent publication.

The present study was commissioned by the Nuffield Provincial Hospitals Trust. It was planned and executed by the Hospital Services Group of English Electric-Leo-Marconi Computers Limited with the assistance of a Regional Hospital Board. Gratitude is due to all members of the staff at the two hospitals involved. Without their willingness to co-operate and assist, it would not have been possible to carry out the study.

Introduction

The application of flowchart technique to hospital procedure does not vary essentially from its application to any other sphere of activity. As in analysis of any task, function or group thereof, it is necessary to establish and record full details of the results required, data being supplied, and procedures to be performed. Almost any job is performed as a series of tasks each consisting of a number of steps carried out in a specified sequence which cannot readily be determined from a narrative type specification of the elements of the tasks. It is first necessary to subdivide the job into a series of tasks, determine the main procedures of each task, and finally to subdivide these latter into increasingly elementary procedures until the basic steps can readily be specified.

While it is not within the province of the present study to give instruction on precise methods of implementing flowchart techniques, suffice it to say that the procedures involved are closely allied to current Organisation and Methods and Operational Research methods; probably require only a few hours instruction from any qualified person to learn as a technique; to be successfully applied do also require certain qualities of character, objectivity and perseverance.

Information is transmitted in hospitals either verbally; or by use of the telephone; or by written documents, including general

letters. The extent to which each is used varies with particular conditions. In emergencies most of the information is given verbally and this is later supported by a written record. The degree of detail that is given in verbal messages again varies not only with the conditions but with the calibre of the staff reporting and receiving the messages.

In the present study, direct observations of procedure, the analysis of past records, and discussions with members of the administrative, medical, specialist and nursing staff in all grades took place over the course of some weeks in a selected general hospital. The data gathered were supplemented by discussions with selected members of staff in another hospital under the same Regional Hospital Board.

There are three possible categories of flowchart: the presentation of the procedural steps of the overall job organisation, the outline of each task and the detailed task flowchart. The charts contained in this report are confined to the first two categories.

Their presentation here is subject to the following provisions:

Many of the events in a hospital can happen throughout a patient's stay and not at a precise point. This would be a weakness of logical charts if they were attempting to give a fully detailed account rather than an overall picture, and they would need to be designed to show the possibility of events happening at any given point in the pattern. It should be emphasised that the general system is subject to change with varying conditions and that individuals have a considerable influence over the flow and form of information. This can be caused by (a) sickness of staff, (b) emergency conditions with or without relation to (a), and (c) the individual methods favoured by staff, from the Consultant to the clerical level.

Throughout the flowcharts and the accompanying notes the word Clinician or Doctor has been used to indicate a member of the medical staff whose exact status is variable. Also the term "Nursing Staff" has been used, and no attempt has been made except in a few specific cases, to indicate what level of Nursing Staff is involved.

The first flowchart, General Flow of Information Charts and Notes is an attempt to indicate the procedures in relation to a time scale. It has been stressed above that this is subject to constant variations and is not intended to relate to either a specific case, or to give other than a general impression of the time scale that could be involved.

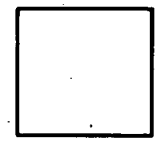
The eleven subsequent sections, an explosion of the overall chart, detail: admission through waiting list, emergency, accident; ward admission procedures, ward, surgical, discharge, death, outpatient, pharmacy and pathology procedures.

The Timescale chart for Two Selected Patients attempts to show the sequence of events from the G. P. 's letters of reference to the writing of the Discharge Summary for two (not necessarily representative) individuals.

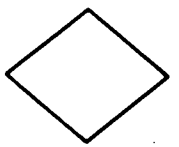
In conclusion, a diagram, Documents Filed in Case Notes, illustrates the various major elements of the records encountered in the study, their originators and storage point.

Key to symbols and summary of abbreviations used in the flow charts

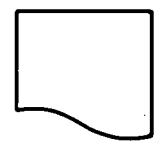
DR	=	Doctor - his status may vary from Consultant to House Officer
H. O.	=	House Officer
N/S	=	Nursing Staff
V/S	=	Vital sign (charts)
P. M.	=	Post Mortem
O. P.	=	Out Patient
SRN	=	State Registered Nurse
Cns	=	Consultant
Regis.	=	Registrar
DDA	=	Drugs as scheduled under the Dangerous Drugs Act
E. N. T.	=	Ear Nose & Throat
T. P. R.	=	Temperature, Pulse and Respiration
B. P.	=	Blood Pressure



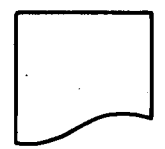
INDICATES AN ACTIVITY POINT



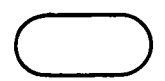
INDICATES A DECISION OR OPTION



INDICATES A DOCUMENT FILED IN CASE NOTES

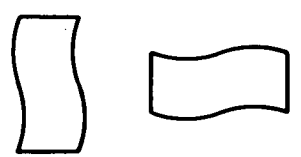


IN CHARTS Nos. 1 & 14, INDICATES A DOCUMENT NOT FILED IN CASE NOTES, OTHERWISE JUST A DOCUMENT.



EMERGENCY PROCEEDURES WHICH MAY OCCUR AT ANY TIME.

RECORDS OR REGISTERS, NOT NECESSARILY IN BOOK FORM



X-RAY PLATES.

Summary of the general flow of information within hospitals

TYPES OF PATIENT ADMISSION

There are four main types of patient admission: as a waiting list patient, as a private patient, as an emergency patient, as an accident patient.

Waiting list patients are referred to the hospital by their own general practitioner, usually by means of a letter containing a brief clinical history. An appointment is then made for them to be examined by a hospital doctor. On the day of the appointment the doctor will have any previous case notes on the patient extracted for him by the records staff and will see the patient. He can decide either to discharge the patient, treat as an outpatient, or to admit the patient for hospital treatment. In this last case the patient will be placed on the waiting list and notified of his admission date by letter, unless "immediate" admission is judged to be necessary. The eventual appointment may be some months after the decision to admit has been made, and depends on the size of the doctor's waiting list and the urgency of the cases he has to deal with. On the day of admission it may still be necessary for the patient to contact the hospital to ascertain whether a bed is still free, this being more applicable when a large number of accident cases are being handled.

Admission procedure for private patients varies. Generally, their general practitioner refers them to a consultant. Normally he contacts the ward sister who controls admissions to private wards, then makes an appointment directly with the patient. The admissions clerk is not involved.

Emergency patients are referred to the hospital by a general practitioner or through the bed bureau; accident cases are brought or come to accident department for treatment. In both these cases the doctor decides whether the patient requires immediate admission. In the former cases the general practitioner will give clinical details over the telephone, and in the latter the patient receives initial treatment in the accident department. Whether or not a bed is available must be taken into account.

ON ADMISSION

On admission to the ward the patient will be registered by the admissions clerk or nursing staff, and in-patient notes commenced and combined with any other notes raised for a previous admission for attendance as an out-patient or in accident department. In addition to the in-patient notes the nursing staff will maintain whatever charts the patient's condition demands and will also record in the nursing report details of the patient's condition and care. The patient's admission is entered on the daily ward return and matron's report, and also on other documents such as diet slips and patient identification slips which may be raised depending on the procedures of the ward and on the patient's condition.

On the day of admission (normally) the patient will be seen by a house officer who prescribes initial treatment and enters it on the treatment sheet and thus commences the case notes. He may request tests or investigations by other departments and will write up request forms for these. When the reports return to the ward the nursing staff will, with the exception of X-rays which are kept separately, file them in the case notes. These case notes are maintained throughout the patient's stay. They are written up by the doctor after each visit to the patient, except on occasions when the patient's condition is unchanged.

WARD ROUNDS

A full round by a consultant is often attended by people from other specialities such as the physiotherapist, the almoner, and the staff connected with the consultant's particular speciality e.g. orthopaedic appliances. These people take notes of his requirements, and instructions to the house officer and sister, whilst the registrar or house officer writes up the case notes either in the course of the round or immediately afterwards. A visit by a consultant to a patient is not normally attended by anyone other than a member of his own staff and

the charge nurse. Verbal reports are given by the nursing staff whenever doctors make a round and members of a consultant's staff will do the same for the consultant. Similarly, nursing staff give verbal reports to each other, especially when the night and day staff change over. The type of information given is either already recorded in the nursing reports or the case notes, or else it is supplementary to these reports. It did not seem that the doctors used the nursing reports to any significant extent.

DISCHARGE AND DEATH

The decision to discharge a patient belongs to the consultant, although in some cases he may delegate this to his registrar, and in others standard procedure provides that if the patient's condition follows a certain pattern he can be discharged. Such provision is mostly confined to certain types of ENT cases, and in these instances the house officer can authorise a discharge. In some hospitals the patients are given on discharge a "Discharge Note" to take to their own general practitioner which is followed by the Discharge Summary or letter which should be written for every patient. The case notes are left on the ward until the house officer or registrar completes the summary. Should he fail to do this within six weeks (at most) the notes are filed by the records staff. If previously required for use in an outpatient clinic, however, they are removed and do not return to the ward. This results in a high probability that the discharge summary will not be completed, and hence will not reach the general practitioner.

If the patient is scheduled for further treatment as an outpatient then the nursing staff will arrange an appointment. This is normally given to the patient before discharge, although on occasions it is necessary to notify them subsequently by post. As a direct result of this study, action was taken by the Hospital Authorities to correct this practice.

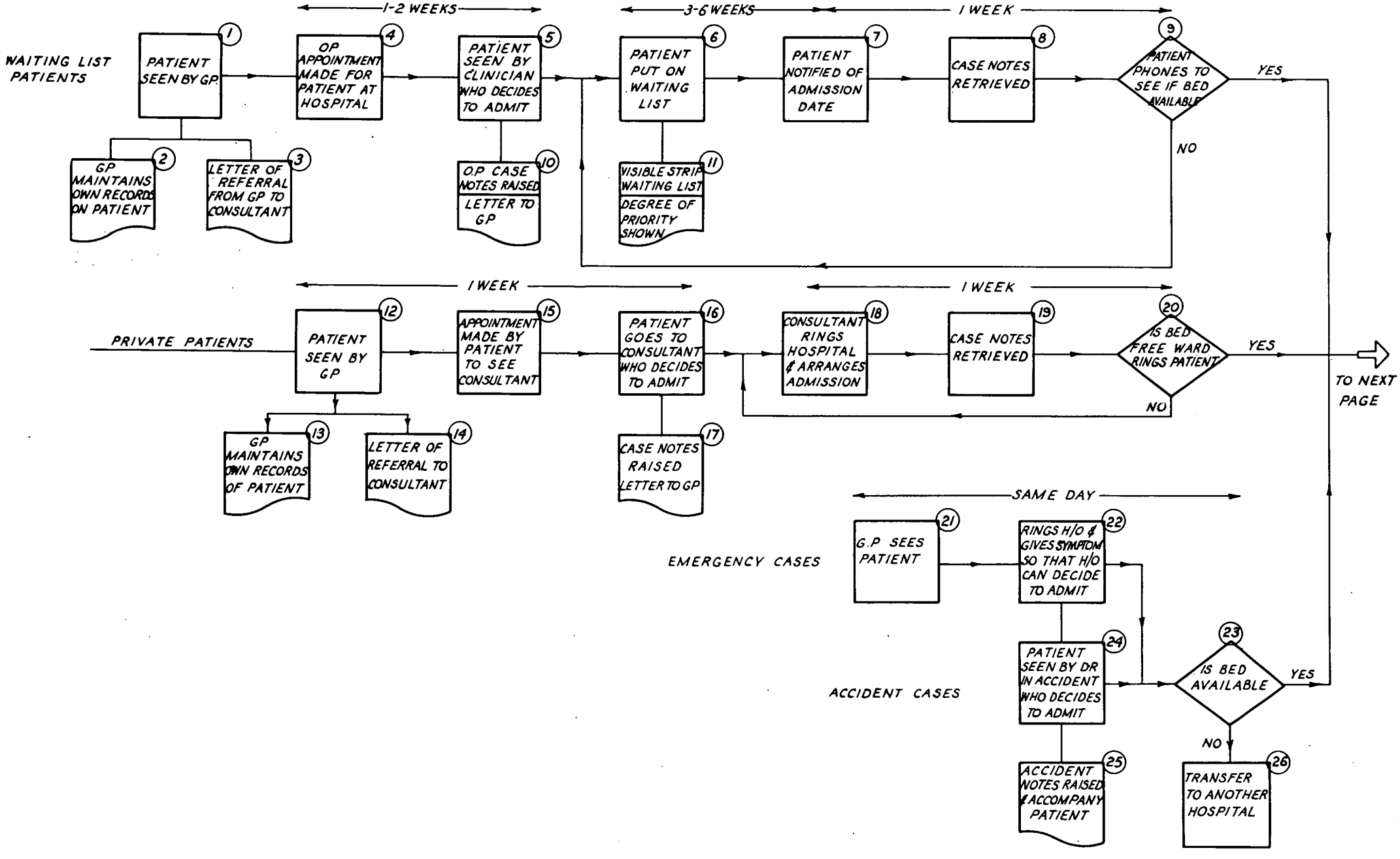
In the event of a patient's death the nursing staff make out a notification of death certificate and send this and the case notes to the Records Office. The house officer, in conjunction with the Records Officer, decides whether the case should be reported to the Coroner, or whether a Cause of Death Certificate can be signed. Should a Post Mortem be required then it is necessary to obtain the relatives' consent. In these cases where a Post Mortem is carried out, a report is included in the case notes, and if a Cause of Death Certificate has already been signed it may be amended by the house officer in the light of the Post Mortem report. The responsibility is, of course, entirely that of the medical staff. The records officer, because of his years of experience, is in a position to advise, but his role is no more than advisory.

When a patient dies or is discharged the case notes are combined with any Vital Sign Charts the nursing staff have raised, and these are filed. Where a diagnostic index is maintained then the hospital number of the patient will be entered under the relevant diagnosis.

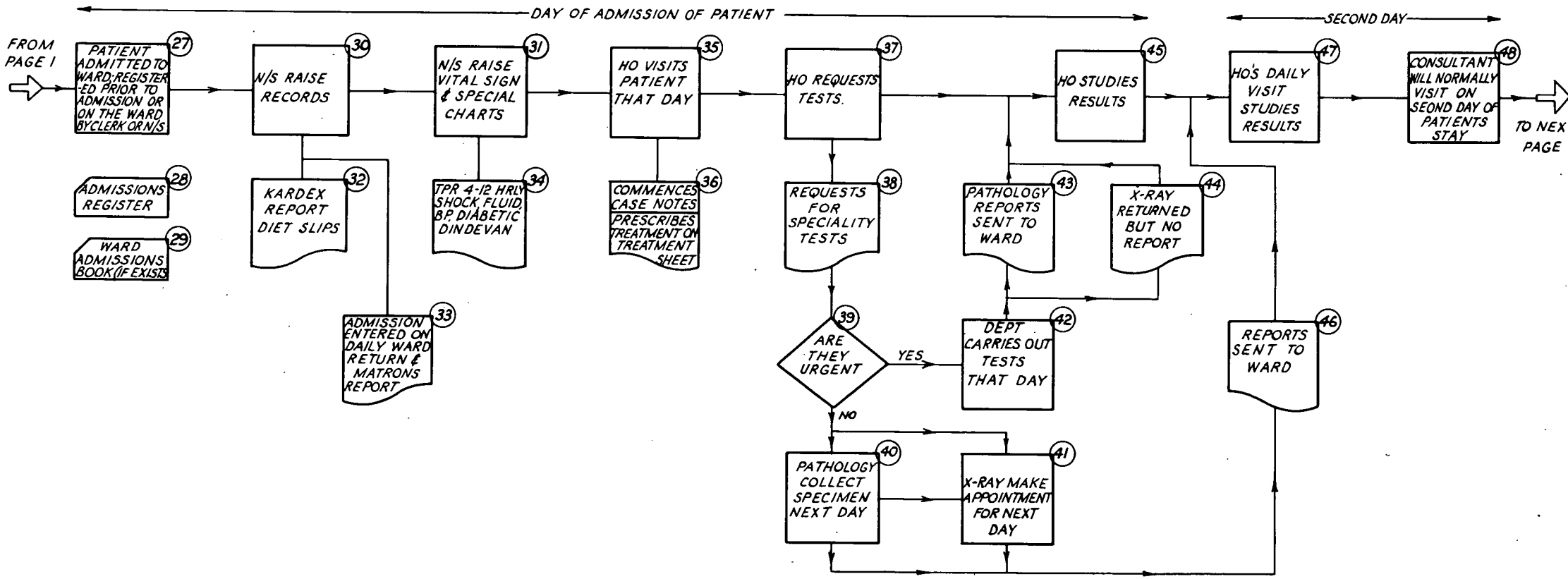
Case notes are currently kept for 20 years, whilst the Kardex Nursing Reports are filed separately for varying periods of time. It appeared to the investigators that considerable advantage would accrue from filing these records together. Other records raised are not retained unless they are of exceptional interest, or in cases where no diagnostic index is maintained, then certain pathology reports, notably histology, are kept indefinitely. The various registers and ward lists in which patient details have been entered are only kept after the patient's discharge because they happen to be in that particular book.

The system for retaining X-rays is somewhat different and after the patient's discharge they are returned to the X-ray Department from the ward and filed there by Radiology number for varying periods of time in excess of 6 years.

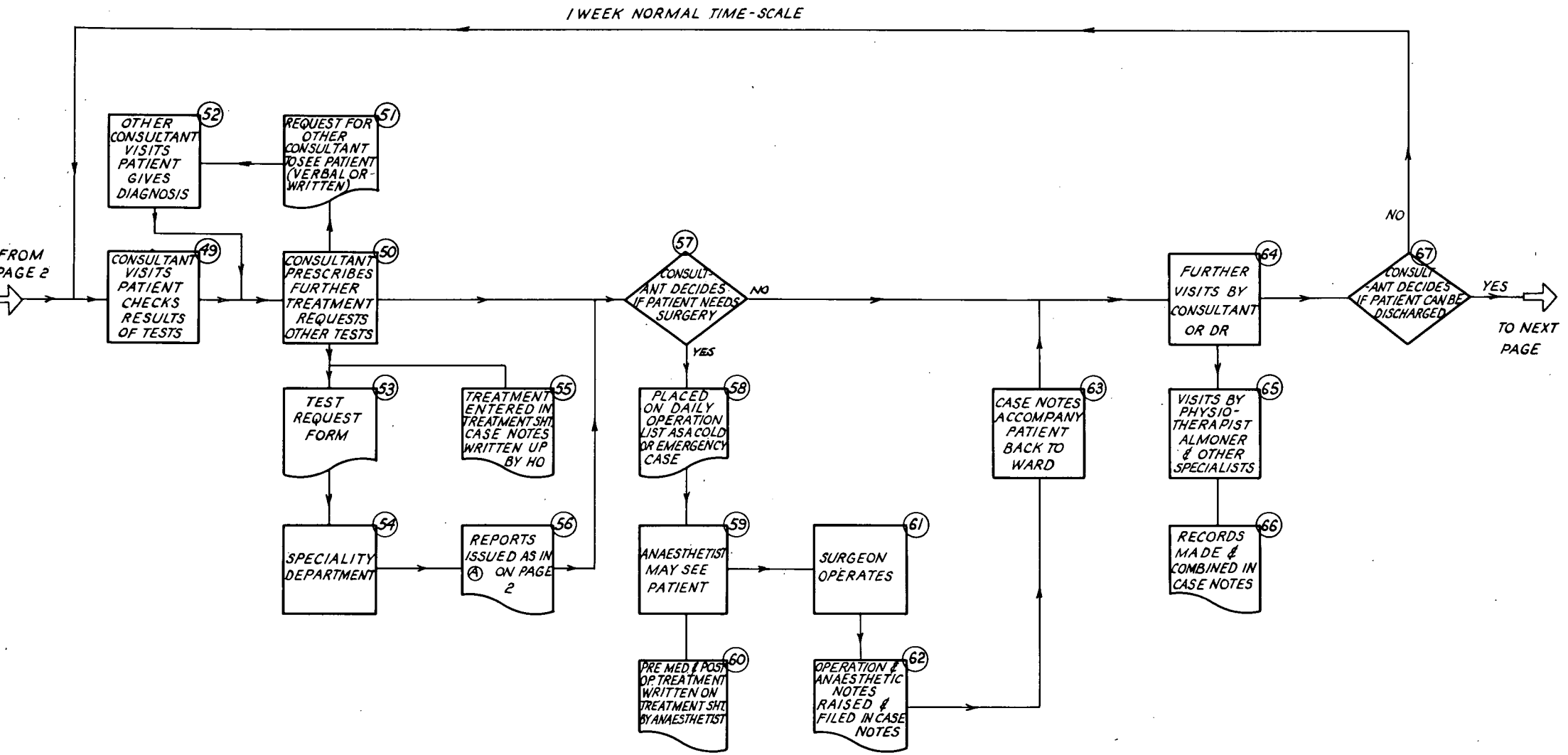
GENERAL FLOW
(INDICATING A TIME SCALE)



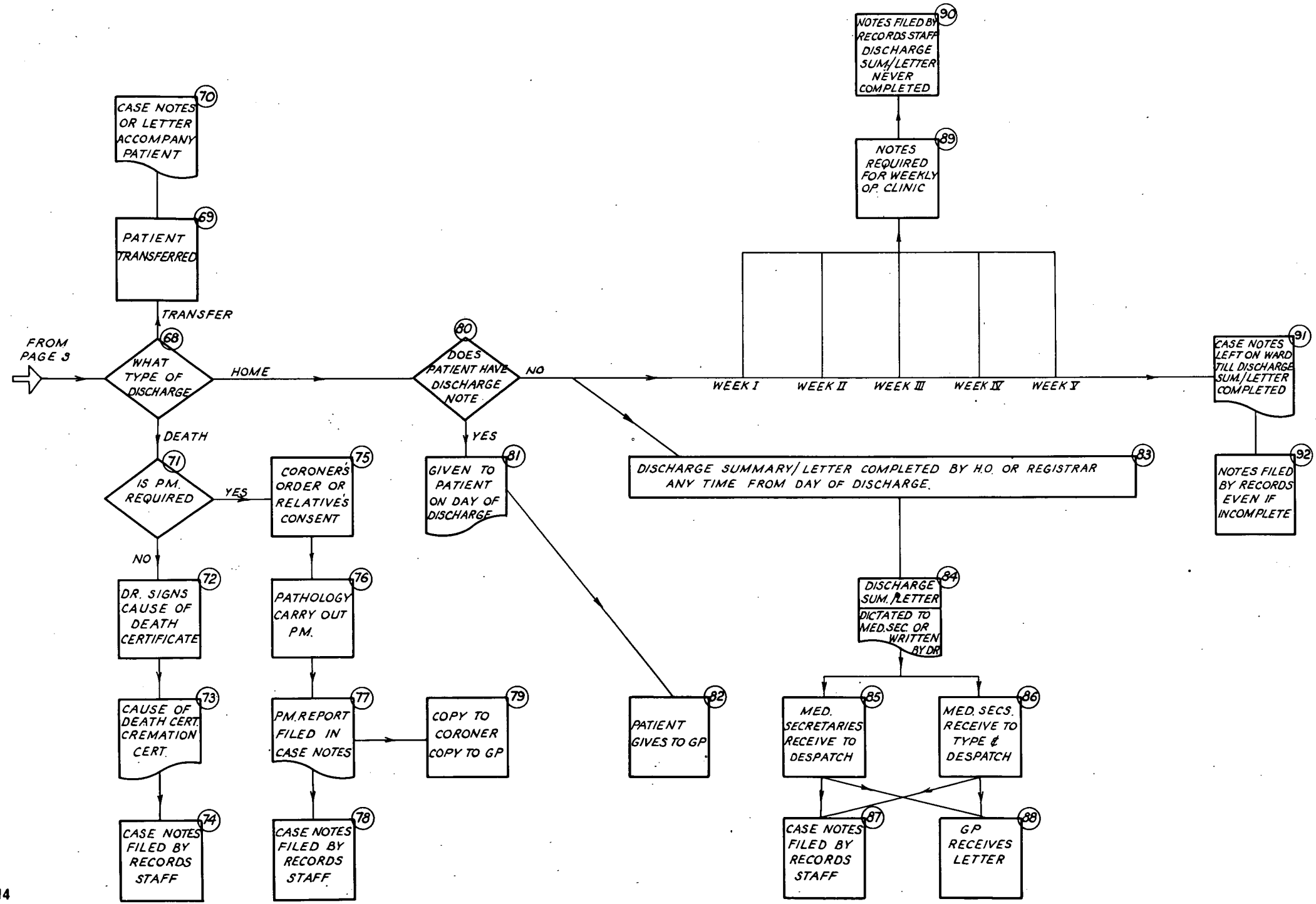
GENERAL FLOW



GENERAL FLOW



GENERAL FLOW



Waiting list admissions

PREPARATIONS FOR CLINICAL EXAMINATION

The result of any tests that the G. P. has had carried out on a patient should be available to the clinician at the time of the first consultation. Occasionally this has not happened and as a result the tests have been duplicated or a consultation postponed.

ADMISSION POLICY

The waiting list position at one hospital was not nearly so acute as at the other. For the first hospital emergency admissions were only handled on alternate weeks and no accident cases were taken. At the other there was an acute shortage of beds, yet the hospital was still active as an accident centre.

THE WAITING LIST

At the latter hospital it was necessary for patients to confirm by telephone on the morning of admission that their bed was still available. If as a result of accident or emergency admissions all the beds had been filled, he would be placed on the waiting list again and given increased priority. Under the existing very difficult conditions cases of patients being refused admission four or five times are quoted, twice being quite common.

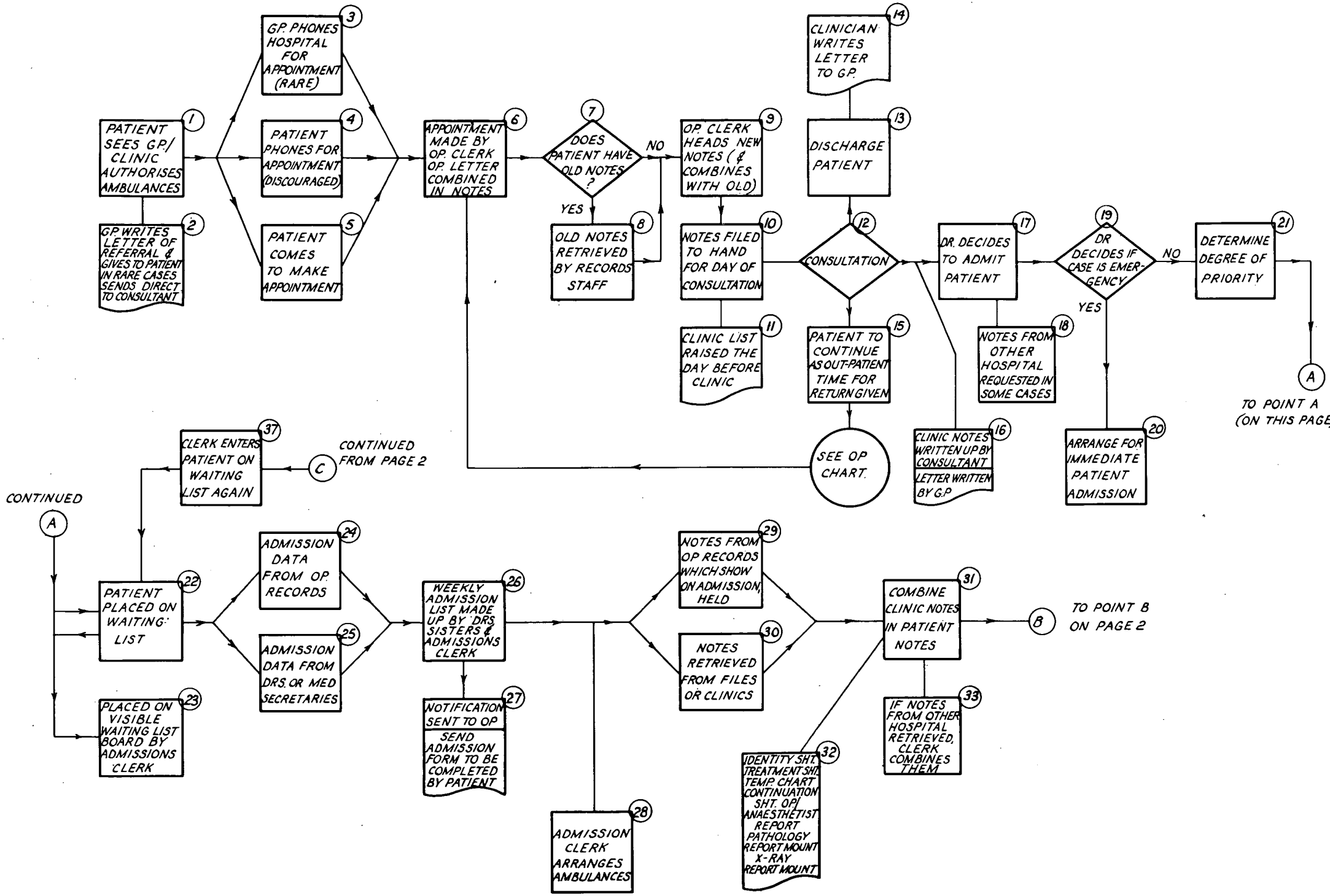
ON ARRIVAL

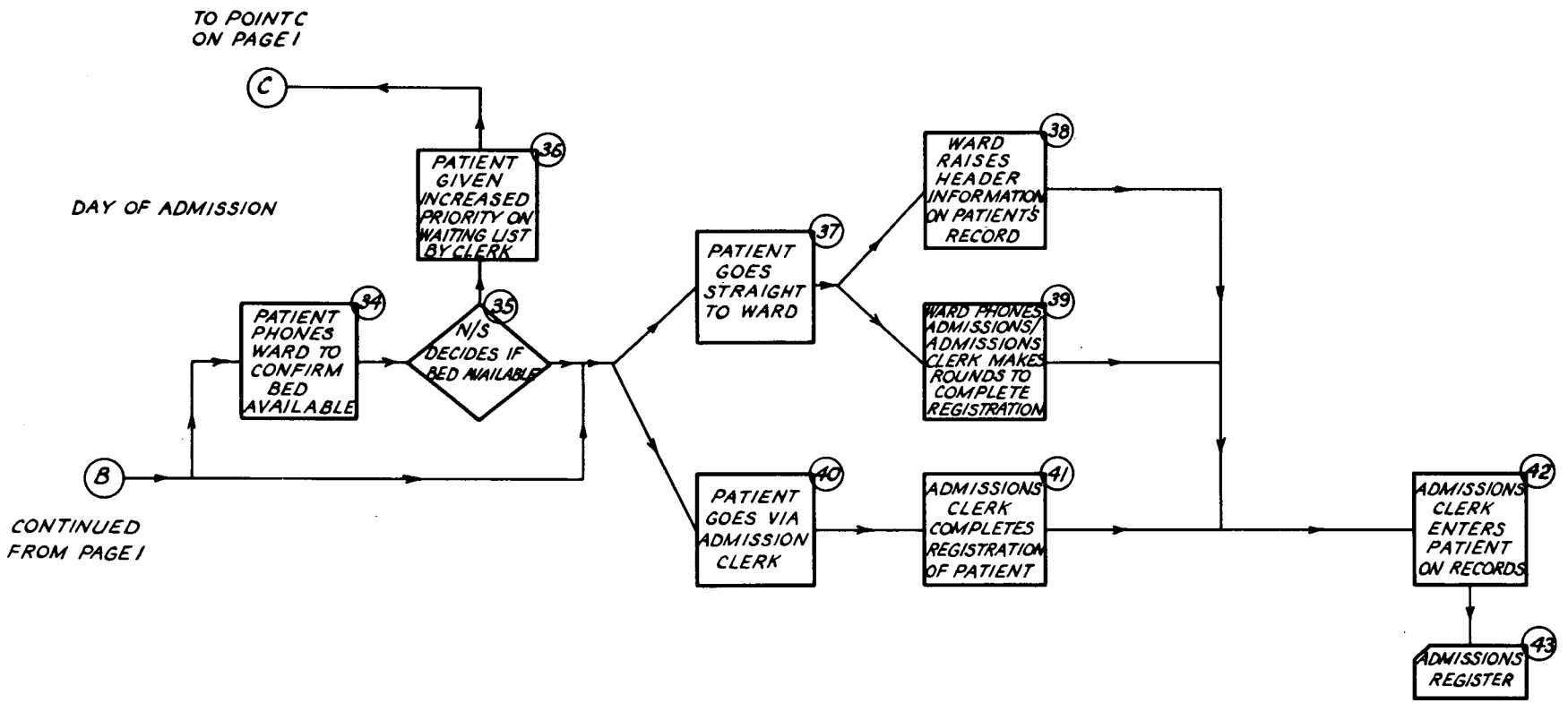
In the event that the patient (incorrectly) goes straight to the ward on arrival and does not check in with the admission clerk, the nursing staff in one hospital created interim "case note heading" papers and the admissions clerk did not know of their arrival until he received the daily ward return on the following day unless he checked by 'phone'.

TELEPHONE REQUESTS FOR APPOINTMENTS

Both hospitals studied discourage these, claiming that it led to confusion and could result in appointments being made without the general practitioner's knowledge. This practice, however, results in considerable inconvenicne to patients.

WAITING LIST ADMISSIONS




TO POINT C ON PAGE 1
C
DAY OF ADMISSION
PATIENT GIVEN INCREASED PRIORITY ON WAITING LIST BY CLERK
36
PATIENT PHONES WARD TO CONFIRM BED AVAILABLE
34
N/S DECIDES IF BED AVAILABLE
35
B
CONTINUED FROM PAGE 1
PATIENT GOES STRAIGHT TO WARD
37
PATIENT GOES VIA ADMISSION CLERK
40
WARD RAISES HEADER INFORMATION ON PATIENT'S RECORD
38
WARD PHONES ADMISSIONS/ ADMISSIONS CLERK MAKES ROUNDS TO COMPLETE REGISTRATION
39
ADMISSIONS CLERK COMPLETES REGISTRATION OF PATIENT
41
ADMISSIONS CLERK ENTERS PATIENT ON RECORDS
42
ADMISSIONS REGISTER
43

Emergency admissions

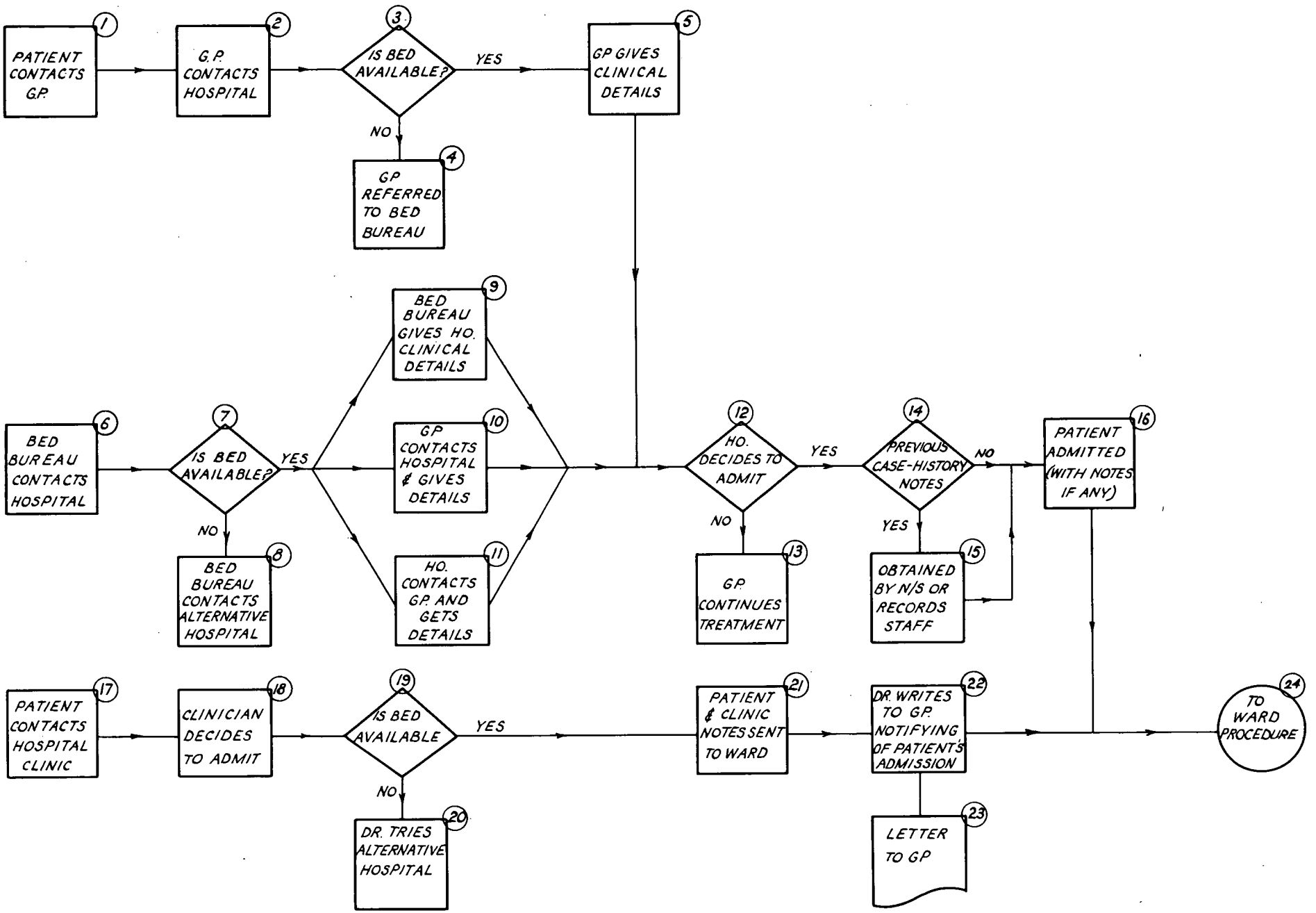
ADMISSIONS VIA BED BUREAU

If the Bed Bureau telephones the hospital, despite the fact that the Bureau is supposed to have the clinical details available, general practitioners find it is much more satisfactory to ring the hospitals concerned once the Bed Bureau have established that there is an available bed, and to give the house officer the clinical details themselves. In some cases the house officer will himself 'phone the G. P. to request clinical details.

RECORD RETRIEVAL

If the patient is known to have been attending the hospital, or if the doctor requests a search to be made for old case notes these will be retrieved by the nursing staff should the records staff be off duty. This was felt by the investigator to impose an additional load upon the nursing staff at a time when they were often under considerable pressure.

EMERGENCY ADMISSIONS



Accident admissions

NATURE OF DEPARTMENT'S WORK

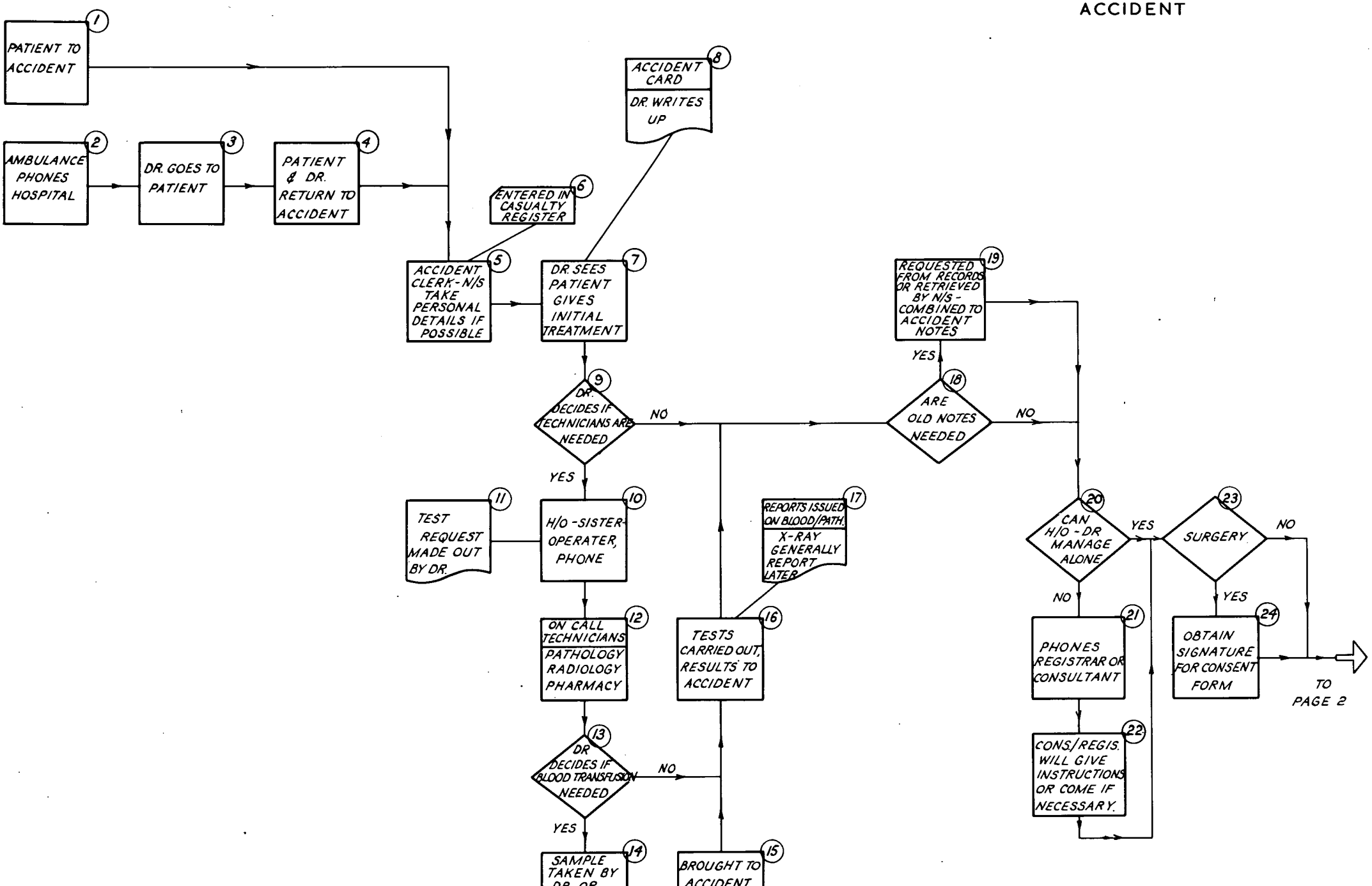
The Accident Department not only deals with normal accident cases but also carries out certain functions more readily associated with a Clinic. For example, in one hospital a Hand Clinic was maintained there and patients often return to have dressings changed and sutures removed. The appointment procedure for patients re-attending is dissimilar to that for outpatients in general, and we have not in detail examined this aspect of the department's work. Valuable time is also consumed by alcoholics and malingerers, but these have also been excluded.

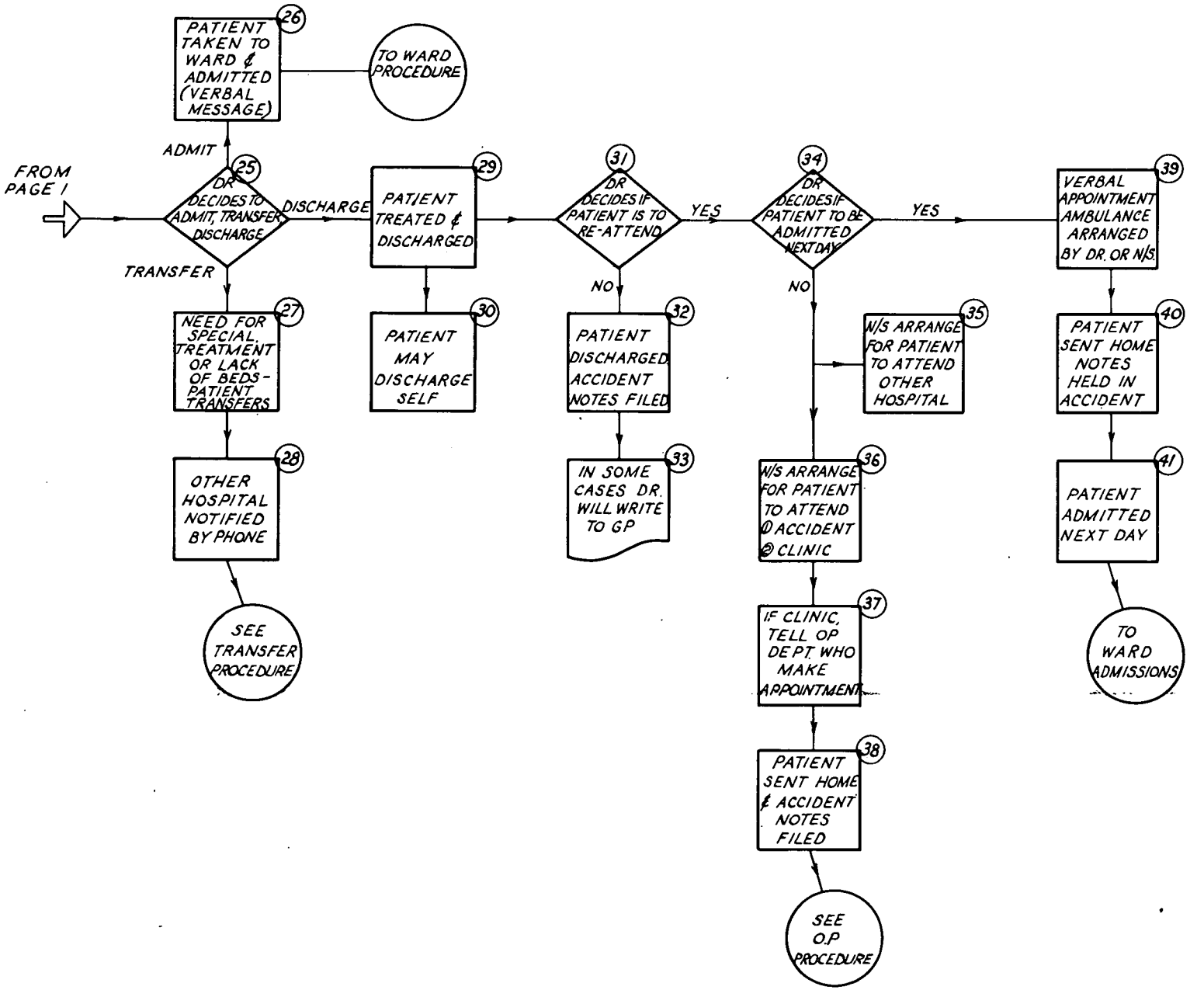
MINOR INJURY CASES

In certain minor superficial injury cases the patients were not examined by a doctor but treated by the nursing staff. Casualty Cards were not made out for these cases. This practice is being urgently investigated by the hospital authorities with a view to its elimination.

TEMPORARY DISCHARGE

In isolated cases patients were discharged to re-attend the following day as an in-patient. In such cases appointments were made for the patient to be brought in and the accident notes filed in the Accident Department. This was caused by the shortage of beds.


1
PATIENT TO ACCIDENT
2
AMBULANCE PHONES HOSPITAL
3
DR. GOES TO PATIENT
4
PATIENT & DR. RETURN TO ACCIDENT
5
ACCIDENT CLERK - N/S TAKE PERSONAL DETAILS IF POSSIBLE
6
ENTERED IN CASUALTY REGISTER
7
DR. SEES PATIENT GIVES INITIAL TREATMENT
8
ACCIDENT CARD
DR. WRITES UP
9
DR. DECIDES IF TECHNICIANS ARE NEEDED
NO
YES
10
H/O - SISTER - OPERATER, PHONE
11
TEST REQUEST MADE OUT BY DR.
12
ON CALL TECHNICIANS
PATHOLOGY
RADIOLOGY
PHARMACY
13
DR. DECIDES IF BLOOD TRANSFUSION NEEDED
NO
YES
14
SAMPLE TAKEN BY DR. OR TECHNICIAN & CIDBS - MATCHED
15
BROUGHT TO ACCIDENT BY SRN. OR TECHNICIAN
16
TESTS CARRIED OUT, RESULTS TO ACCIDENT
17
REPORTS ISSUED ON BLOOD/PATH.
X-RAY GENERALLY REPORT LATER
18
ARE OLD NOTES NEEDED
YES
NO
19
REQUESTED FROM RECORDS OR RETRIEVED BY N/S - COMBINED TO ACCIDENT NOTES
20
CAN H/O - DR MANAGE ALONE
YES
NO
21
PHONES REGISTRAR OR CONSULTANT
22
CONS./REGIS. WILL GIVE INSTRUCTIONS OR COME IF NECESSARY.
23
SURGERY
YES
NO
24
OBTAIN SIGNATURE FOR CONSENT FORM
TO PAGE 2


FROM PAGE 1
25 DR DECIDES TO ADMIT, TRANSFER, DISCHARGE
ADMIT
26 PATIENT TAKEN TO WARD & ADMITTED (VERBAL MESSAGE)
TO WARD PROCEDURE
TRANSFER
27 NEED FOR SPECIAL TREATMENT OR LACK OF BEDS - PATIENT TRANSFERS
28 OTHER HOSPITAL NOTIFIED BY PHONE
SEE TRANSFER PROCEDURE
DISCHARGE
29 PATIENT TREATED & DISCHARGED
30 PATIENT MAY DISCHARGE SELF
31 DR DECIDES IF PATIENT IS TO RE-ATTEND
NO
32 PATIENT DISCHARGED ACCIDENT NOTES FILED
33 IN SOME CASES DR. WILL WRITE TO GP
YES
34 DR DECIDES IF PATIENT TO BE ADMITTED NEXT DAY
NO
35 W/S ARRANGE FOR PATIENT TO ATTEND OTHER HOSPITAL
36 W/S ARRANGE FOR PATIENT TO ATTEND ① ACCIDENT ② CLINIC
37 IF CLINIC, TELL OP DEPT WHO MAKE APPOINTMENT
38 PATIENT SENT HOME & ACCIDENT NOTES FILED
SEE O.P PROCEDURE
YES
39 VERBAL APPOINTMENT AMBULANCE ARRANGED BY DR. OR N/S.
40 PATIENT SENT HOME NOTES HELD IN ACCIDENT
41 PATIENT ADMITTED NEXT DAY
TO WARD ADMISSIONS

Ward admissions

PATIENT IDENTIFICATION

In some wards an identification slip is made out to be kept by the patient's bed. In one ward where all notes are kept in the sister's office there is no visible means of identifying the patient other than by the bed number.

MISCELLANEOUS RECORDS

Miscellaneous records made up by the nursing staff vary from ward to ward, but include a Ward Admissions Book which appears to be used mainly for forwarding mail which is not considered to be ipso facto a nursing function. A bath book is kept on one ward and a weight book is kept on a paediatric ward, whilst temperature books are maintained in about half the wards visited.

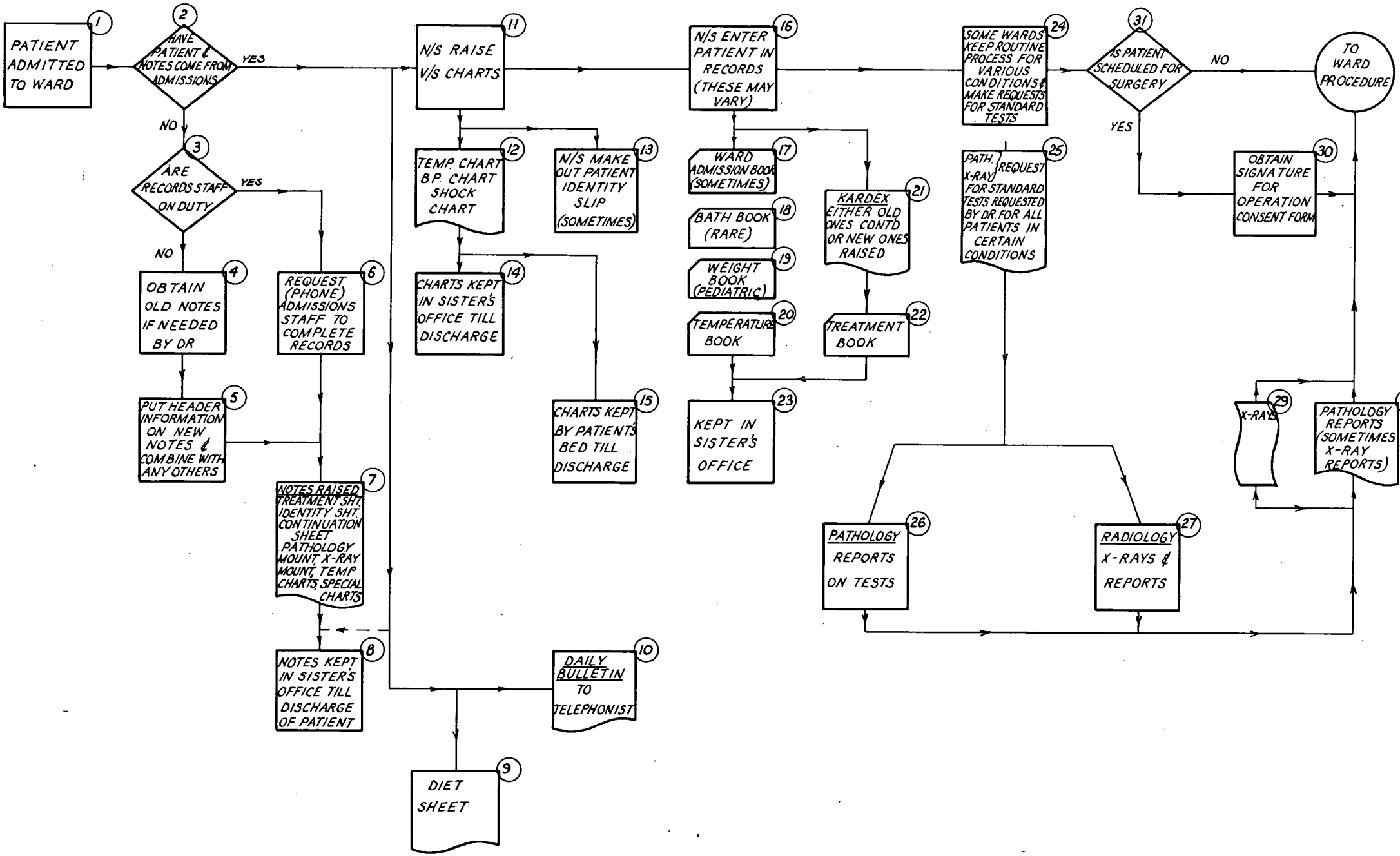
REFERENCE TO KARDEX NURSING REPORT

The Kardex is the main nursing staff report and is the most detailed record of the patients' condition and treatment available. The only instance of reference to it by staff other than that of nursing staff, is by a physiotherapist.

THE TREATMENT SHEET

The treatment sheet is a summary of the medication and nursing care to be given to each patient, whilst the Kardex is a summary of what is being done and any general observations made. In some cases, however, the nursing staff also enter into a treatment book any treatment that is to be given and on one ward the treatment sheets are extracted from the case notes and used as a treatment book.

WARD ADMISSIONS (PRIOR TO DOCTOR'S VISIT)



Ward procedures

CONSULTANT'S ROUND

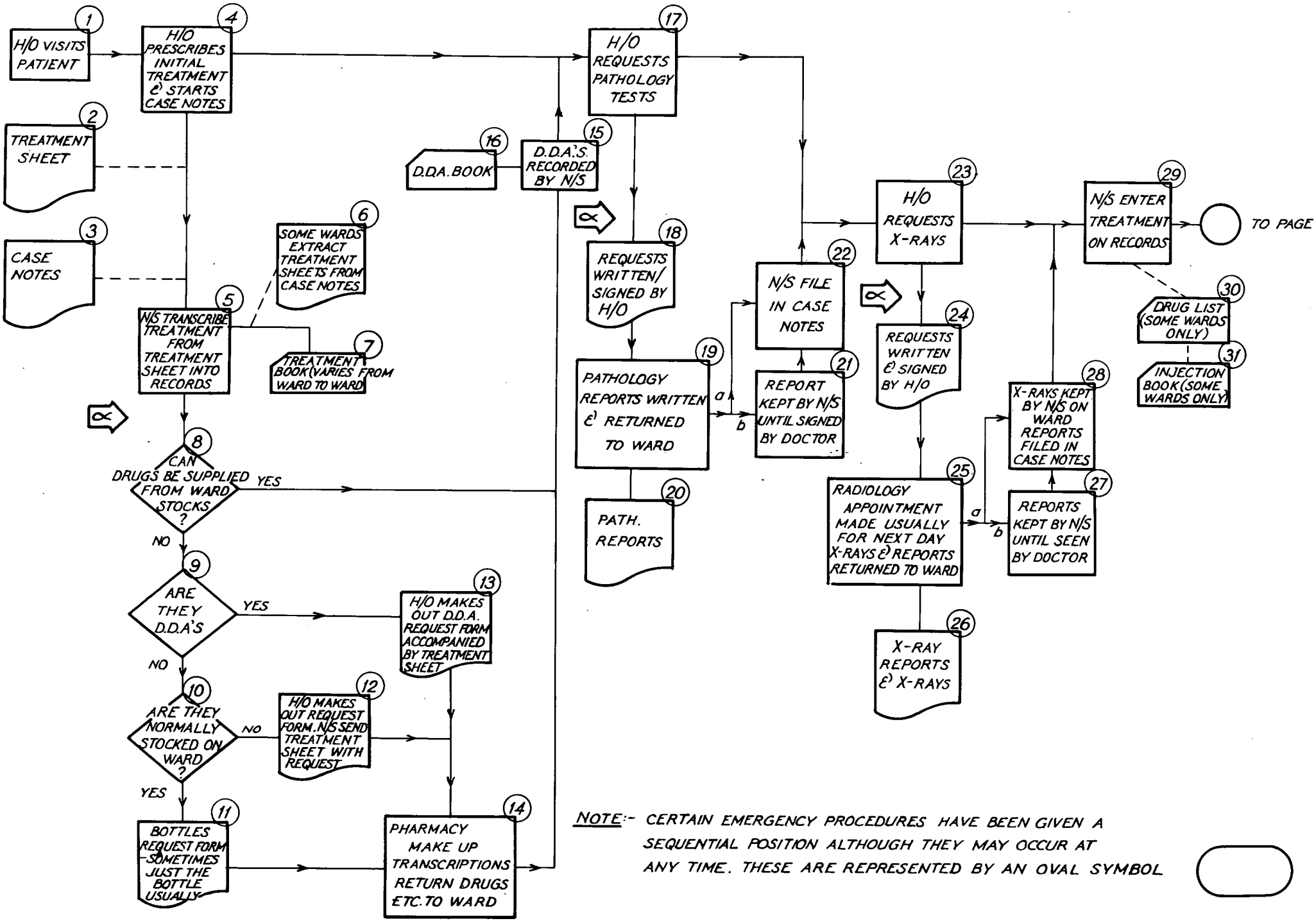
A consultant's full round was observed at one hospital where he was attended by his registrar and house officer, the almoner, the physiotherapist, a nurse from Orthopaedic Appliances, the charge nurse, and an S. H. S. O. Notes were made of the consultant's prescriptions and requests by the charge nurse and the house officer. These notes should have duplicated each other. The almoner, the physiotherapist and the Orthopaedic Appliances nurse made notes in relation to certain patients. At the same time, the registrar wrote up the case notes, a practice commended by the consultant as desirable. It appeared to the investigators that much duplicated work could have been avoided by the use of an efficient secretary. It is understood that this is the practice in some hospitals and that it has proved satisfactory.

EMERGENCIES

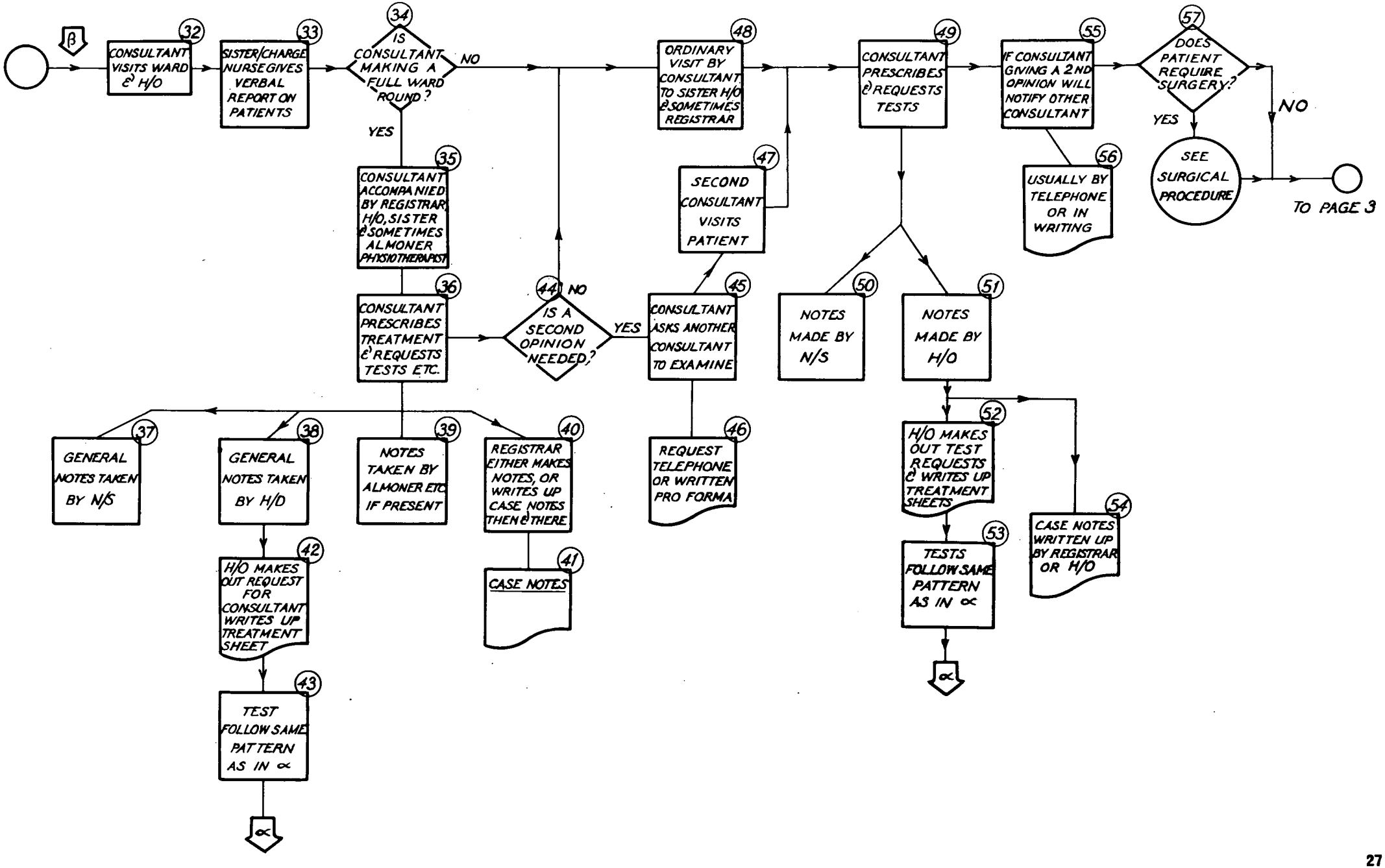
Emergencies may, of course, occur at any time during the patient's stay and no attempt has been made to enumerate the various treatment and care given to different patient conditions. If the emergency is grave the nursing staff will ring for a doctor at once, who will give her short verbal instructions and come as quickly as possible. Nursing staff will often ring and ask a doctor to authorise medicine or treatment for a patient whose condition changes at night. They will also telephone doctors on receipt of path. tests and request a change of treatment if the results are other than as expected. In cases where they propose treatments to house officers, the house officers according to their experience tend to rely on the charge nurses' advice as their experience is generally much greater than that of the H. O.

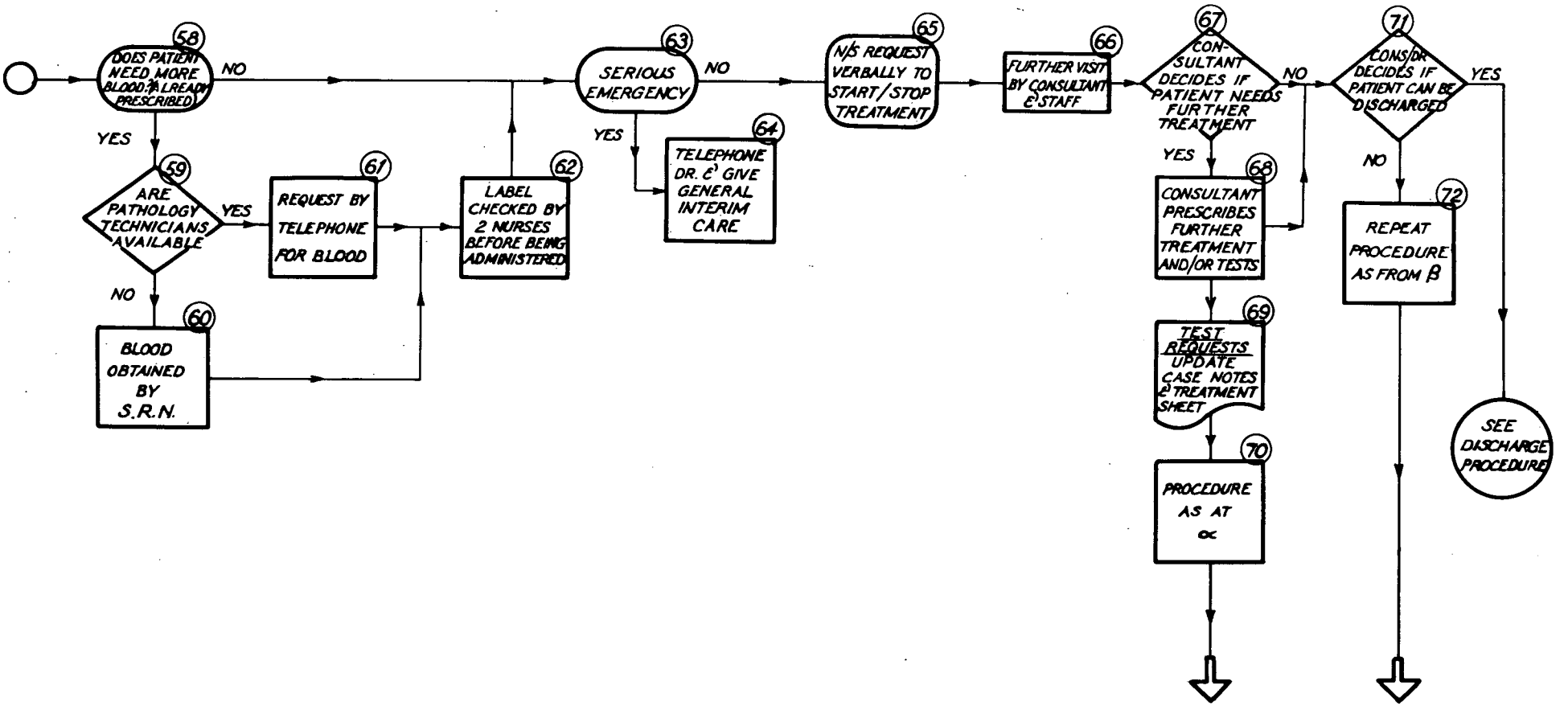
The Hospital Authorities, subsequent to the study, expressed concern about the extent of telephonic instruction and are reviewing the position.

WARD PROCEDURES (FROM H/O'S VISIT TO DISCHARGE OR DEATH)



NOTE:- CERTAIN EMERGENCY PROCEDURES HAVE BEEN GIVEN A SEQUENTIAL POSITION ALTHOUGH THEY MAY OCCUR AT ANY TIME. THESE ARE REPRESENTED BY AN OVAL SYMBOL

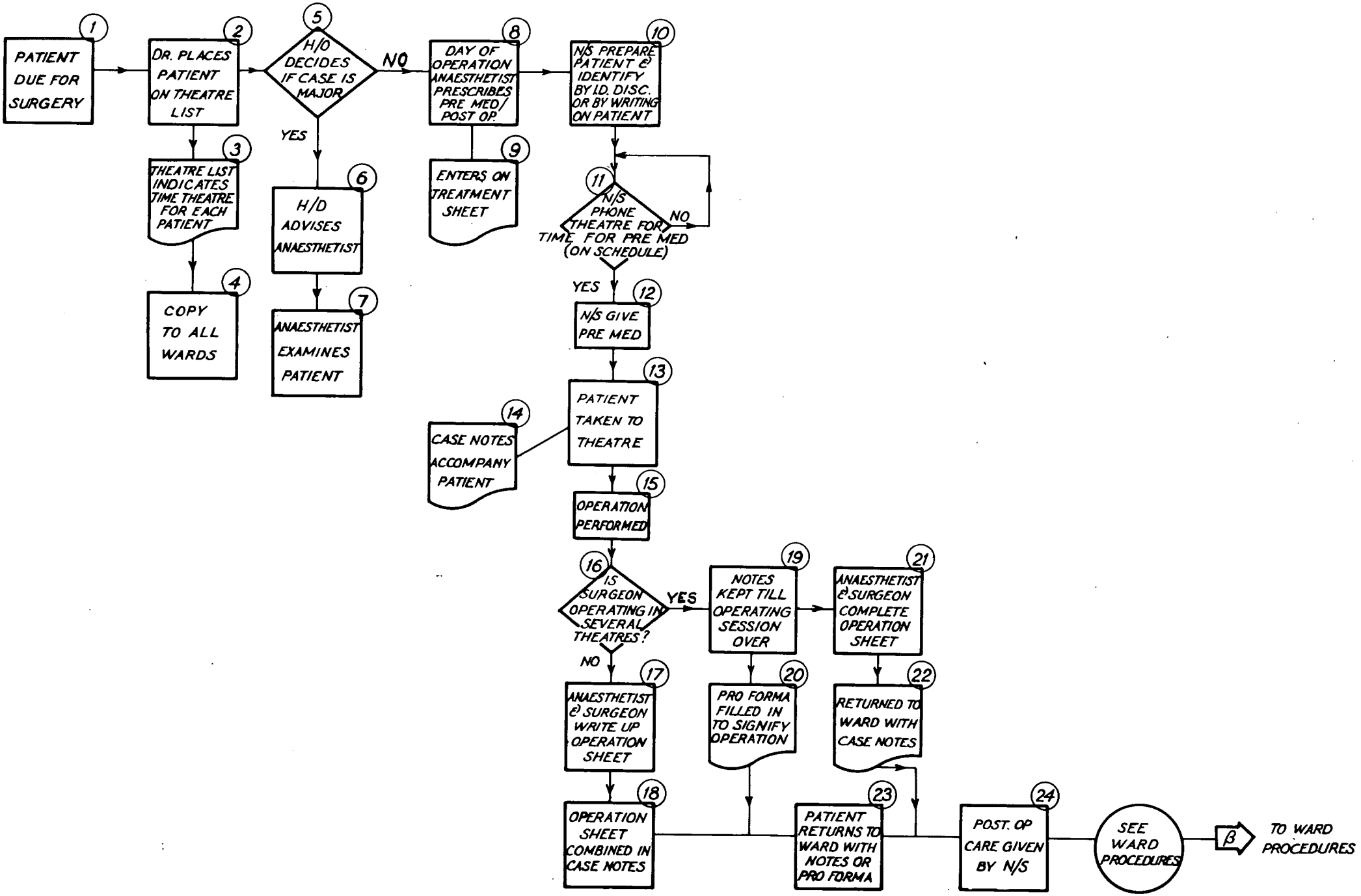

β
32 CONSULTANT VISITS WARD & H/O
33 SISTER/CHARGE NURSE GIVES VERBAL REPORT ON PATIENTS
34 IS CONSULTANT MAKING A FULL WARD ROUND?
NO
YES
35 CONSULTANT ACCOMPANIED BY REGISTRAR, H/O, SISTER & SOMETIMES ALMONER PHYSIOTHERAPIST
36 CONSULTANT PRESCRIBES TREATMENT & REQUESTS TESTS ETC.
44 IS A SECOND OPINION NEEDED?
NO
YES
45 CONSULTANT ASKS ANOTHER CONSULTANT TO EXAMINE
46 REQUEST TELEPHONE OR WRITTEN PRO FORMA
47 SECOND CONSULTANT VISITS PATIENT
48 ORDINARY VISIT BY CONSULTANT TO SISTER H/O & SOMETIMES REGISTRAR
49 CONSULTANT PRESCRIBES & REQUESTS TESTS
50 NOTES MADE BY N/S
51 NOTES MADE BY H/O
52 H/O MAKES OUT TEST REQUESTS & WRITES UP TREATMENT SHEETS
53 TESTS FOLLOW SAME PATTERN AS IN ∝
∝
54 CASE NOTES WRITTEN UP BY REGISTRAR OR H/O
55 IF CONSULTANT GIVING A 2ND OPINION WILL NOTIFY OTHER CONSULTANT
56 USUALLY BY TELEPHONE OR IN WRITING
57 DOES PATIENT REQUIRE SURGERY?
YES
NO
SEE SURGICAL PROCEDURE
TO PAGE 3
37 GENERAL NOTES TAKEN BY N/S
38 GENERAL NOTES TAKEN BY H/D
39 NOTES TAKEN BY ALMONER ETC IF PRESENT
40 REGISTRAR EITHER MAKES NOTES, OR WRITES UP CASE NOTES THEN & THERE
41 CASE NOTES
42 H/O MAKES OUT REQUEST FOR CONSULTANT WRITES UP TREATMENT SHEET
43 TEST FOLLOW SAME PATTERN AS IN ∝
∝


58
DOES PATIENT NEED MORE BLOOD? (A READY PRESCRIBED)
NO
YES
59
ARE PATHOLOGY TECHNICIANS AVAILABLE
YES
NO
61
REQUEST BY TELEPHONE FOR BLOOD
60
BLOOD OBTAINED BY S.R.N.
62
LABEL CHECKED BY 2 NURSES BEFORE BEING ADMINISTERED
63
SERIOUS EMERGENCY
NO
YES
64
TELEPHONE DR. & GIVE GENERAL INTERIM CARE
65
N/S REQUEST VERBALLY TO START/STOP TREATMENT
66
FURTHER VISIT BY CONSULTANT & STAFF
67
CONSULTANT DECIDES IF PATIENT NEEDS FURTHER TREATMENT
NO
YES
68
CONSULTANT PRESCRIBES FURTHER TREATMENT AND/OR TESTS
69
TEST REQUESTS UPDATE CASE NOTES & TREATMENT SHEET
70
PROCEDURE AS AT α
71
CONS/DR DECIDES IF PATIENT CAN BE DISCHARGED
YES
NO
72
REPEAT PROCEDURE AS FROM β
SEE DISCHARGE PROCEDURE

Surgical procedures

PRE-SURGERY PROCEDURE

On the day of the operation the nursing staff will prepare the patient for the theatre and will identify the patient either by writing on the patient his name and operation, or by attaching an identification disc. The nursing staff telephone the theatre to find out if the operations are going according to schedule and if not at what time the premedication should be given. This resulted in a considerable number of telephone calls from ward to theatre block throughout the schedule. The investigating team recommended to the matron (who agreed with the suggestion) that the theatre should be assumed to be on schedule unless they notify the ward to the contrary.


1
PATIENT DUE FOR SURGERY
2
DR. PLACES PATIENT ON THEATRE LIST
3
THEATRE LIST INDICATES TIME THEATRE FOR EACH PATIENT
4
COPY TO ALL WARDS
5
H/O DECIDES IF CASE IS MAJOR
NO
YES
6
H/D ADVISES ANAESTHETIST
7
ANAESTHETIST EXAMINES PATIENT
8
DAY OF OPERATION ANAESTHETIST PRESCRIBES PRE MED/ POST OP.
9
ENTERS ON TREATMENT SHEET
10
N/S PREPARE PATIENT & IDENTIFY BY I.D. DISC. OR BY WRITING ON PATIENT
11
N/S PHONE THEATRE FOR TIME FOR PRE MED (ON SCHEDULE)
NO
YES
12
N/S GIVE PRE MED
13
PATIENT TAKEN TO THEATRE
14
CASE NOTES ACCOMPANY PATIENT
15
OPERATION PERFORMED
16
IS SURGEON OPERATING IN SEVERAL THEATRES?
YES
NO
17
ANAESTHETIST & SURGEON WRITE UP OPERATION SHEET
18
OPERATION SHEET COMBINED IN CASE NOTES
19
NOTES KEPT TILL OPERATING SESSION OVER
20
PRO FORMA FILLED IN TO SIGNIFY OPERATION
21
ANAESTHETIST & SURGEON COMPLETE OPERATION SHEET
22
RETURNED TO WARD WITH CASE NOTES
23
PATIENT RETURNS TO WARD WITH NOTES OR PRO FORMA
24
POST. OP CARE GIVEN BY N/S
SEE WARD PROCEDURES
β
TO WARD PROCEDURES

Discharge procedures

GENERAL

The decision to discharge a patient belongs to the consultant or his registrar. However, procedures vary considerably from one type of specialty to another and from consultant to consultant. In certain wards, notably ENT, discharge is virtually automatic in certain conditions, although allegations have been made that consultants keep their patients in longer than necessary in order to ensure that the particular bed is available for their next patient. In discussion consultants and doctors were divided on the merits of a daily bulletin that would summarise patients' conditions. Some considered that it would be most helpful and would enable them to discharge or begin certain treatments earlier. Others did not think it could serve them at all.

GENERAL PRACTITIONER NOTIFICATION

At one hospital the house officer makes out a brief discharge note and hands this to the patient to give to his own general practitioner, thus eliminating to some extent the problem of general practitioner's seeing patients and having no knowledge of their recent hospital treatment. This note is used in some 80% of cases. In some cases no notification is sent to the general practitioner because they are considered to be too routine or too minor: in other cases the doctor will decide that the

patient should not know the diagnosis or prognosis and therefore cannot be entrusted with a discharge slip. In most cases the case notes are left on the ward for the registrar or house officer to complete the discharge summary or letter. No distinctions have been found between a letter or a summary which apply to medical and surgical cases respectively and from here on it is referred to simply as a summary. The case notes are left on the ward until the completion of the summary but house officers are reminded by both records personnel and the nursing staff that the summary is still outstanding. However, if after a given period (six weeks is suggested as a typical time) they are still not completed the records are removed from the ward by the records staff. If they are required by an outpatient clinic at any time before the completion of the summary the records staff will take them from the ward to the clinic. As a result, some discharge notes (a study of old notes suggested some 30%) are never completed.

The procedure for the completion of the discharge summary varies between hospitals and between individual doctors within the hospital. At one where the accident service imposes an even greater workload on house officers there are considerable delays, which appear to be inevitable.
General Practitioners report that such information from a hospital is vital to them, but to be of use it must be timely. They are also critical of the format and content of some summaries, notably from clinics rather than those concerning inpatients. It appears that reports clear to the doctor who writes them are not always as helpful to the general practitioner who receives the summary.

The house officer completes the summary either by writing it and giving it to the medical secretaries to despatch, or by giving it to them to type and subsequently despatch. The amount of delay in this section seems small and entirely reasonable, although sickness and shortage of staff can and undoubtedly does cause delay from time to time. It is considered essential that the general practitioner should receive the letter within three days of its completion by the house officer.

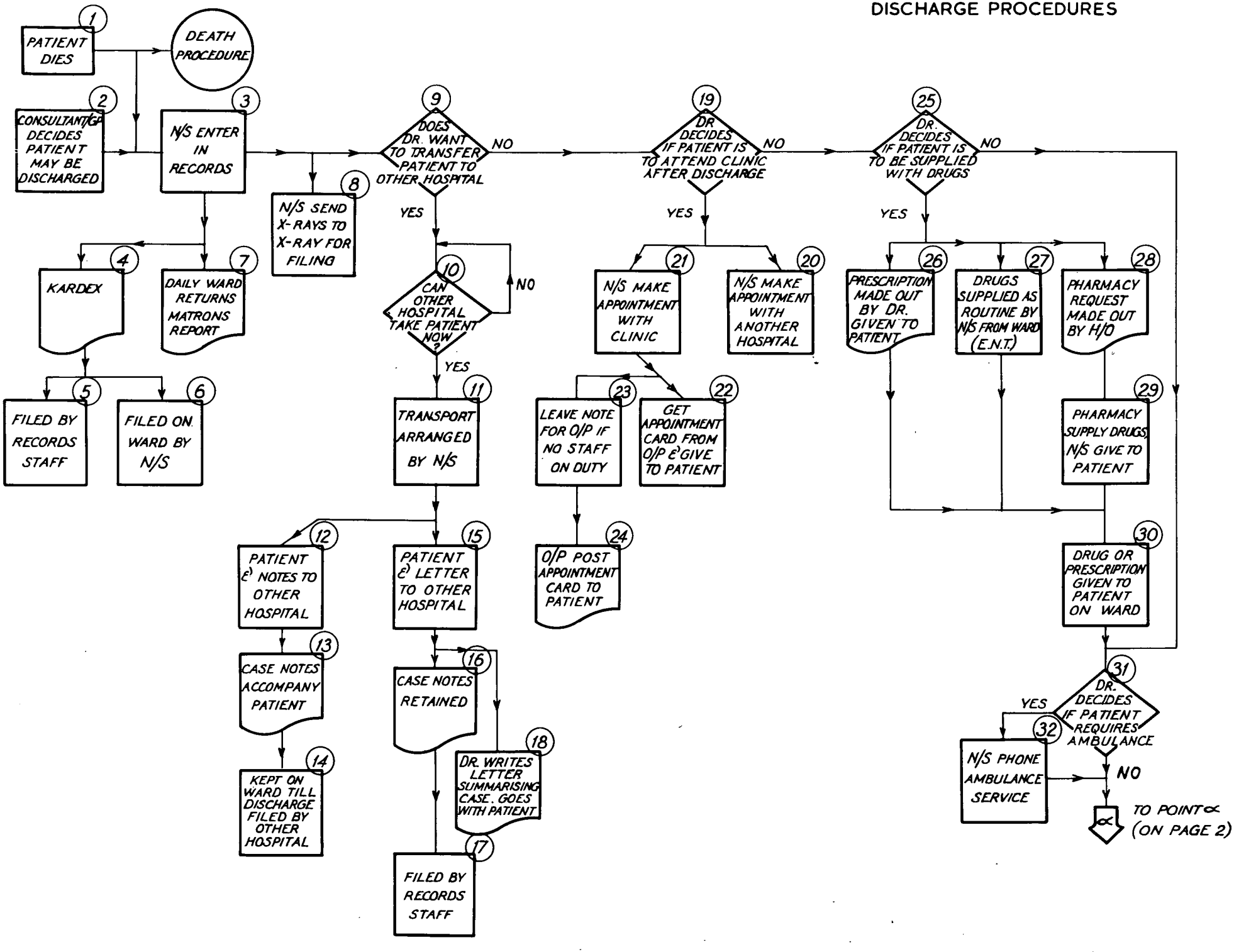
RETENTION OF RECORDS

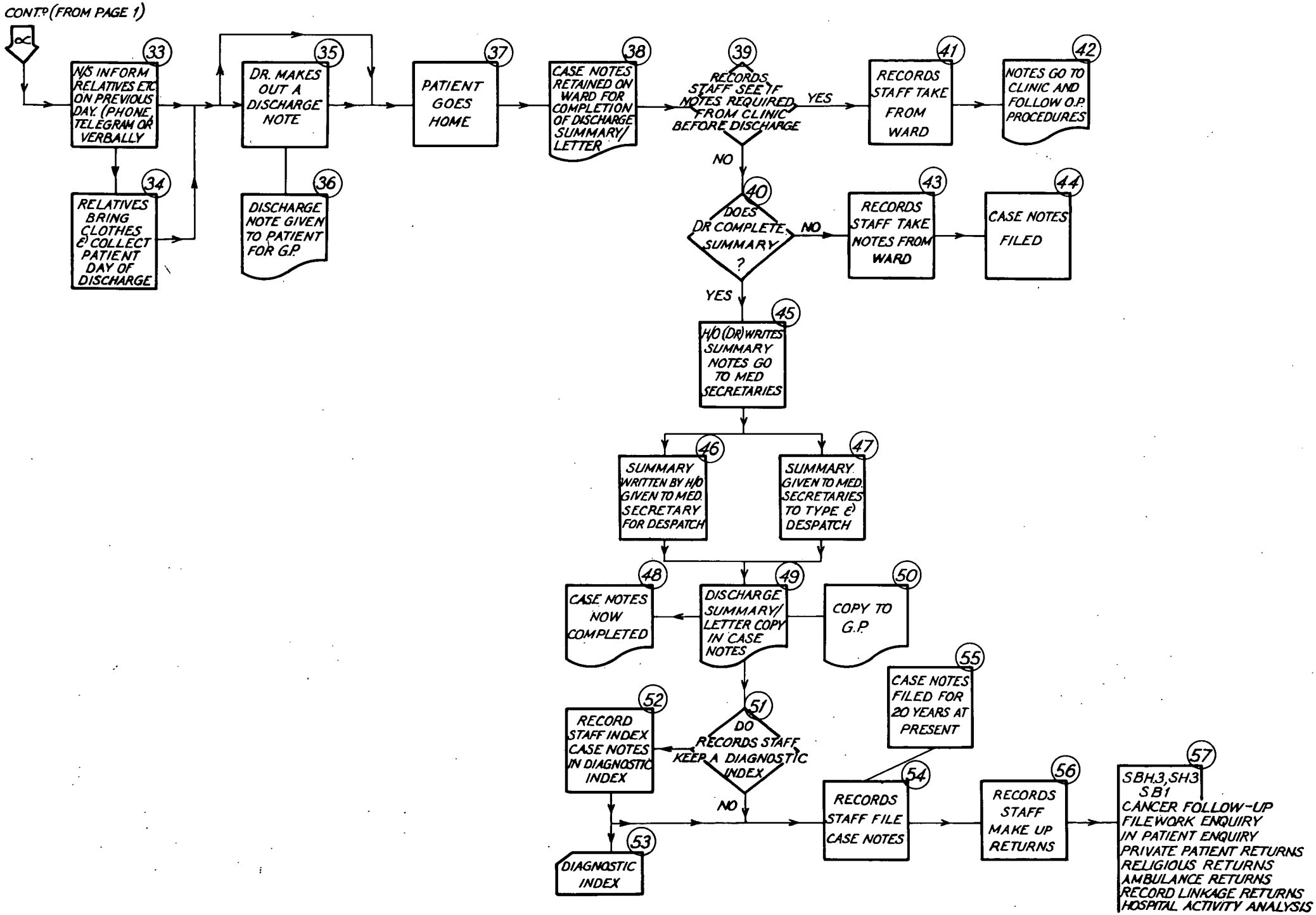
On completion of the discharge letter the case notes are filed by the records staff and on current theory, retained for twenty years. In practice neither hospitals investigated had destroyed <u>any</u> old case notes.

DIAGNOSTIC INDEX

At one hospital where a diagnostic index is maintained the case notes are entered in this. The diagnostic index contains the case note numbers under classified diseases. The only information it can give is which case notes relate to a specific disease, but it nevertheless forms an invaluable aid to research and is the only system currently available at the hospitals studied by which notes can be extracted to compare types of treatment or to study instances of disease. The present system is to file case notes under hospital number and an index of names and hospital numbers maintained by the records staff. This makes the retrieval of the information from case notes a Herculean task, yet it remains the only source from which statistical information can be built up. Certain consultants keep their own private notes and index of various treatments and diseases. However, these have been excluded as they are merely a private endeavour and form no part of the general system. It is felt that the computer will in the future be able to play an immense role in facilitating this record storage, retrieval and information handling task.

DISCHARGE PROCEDURES

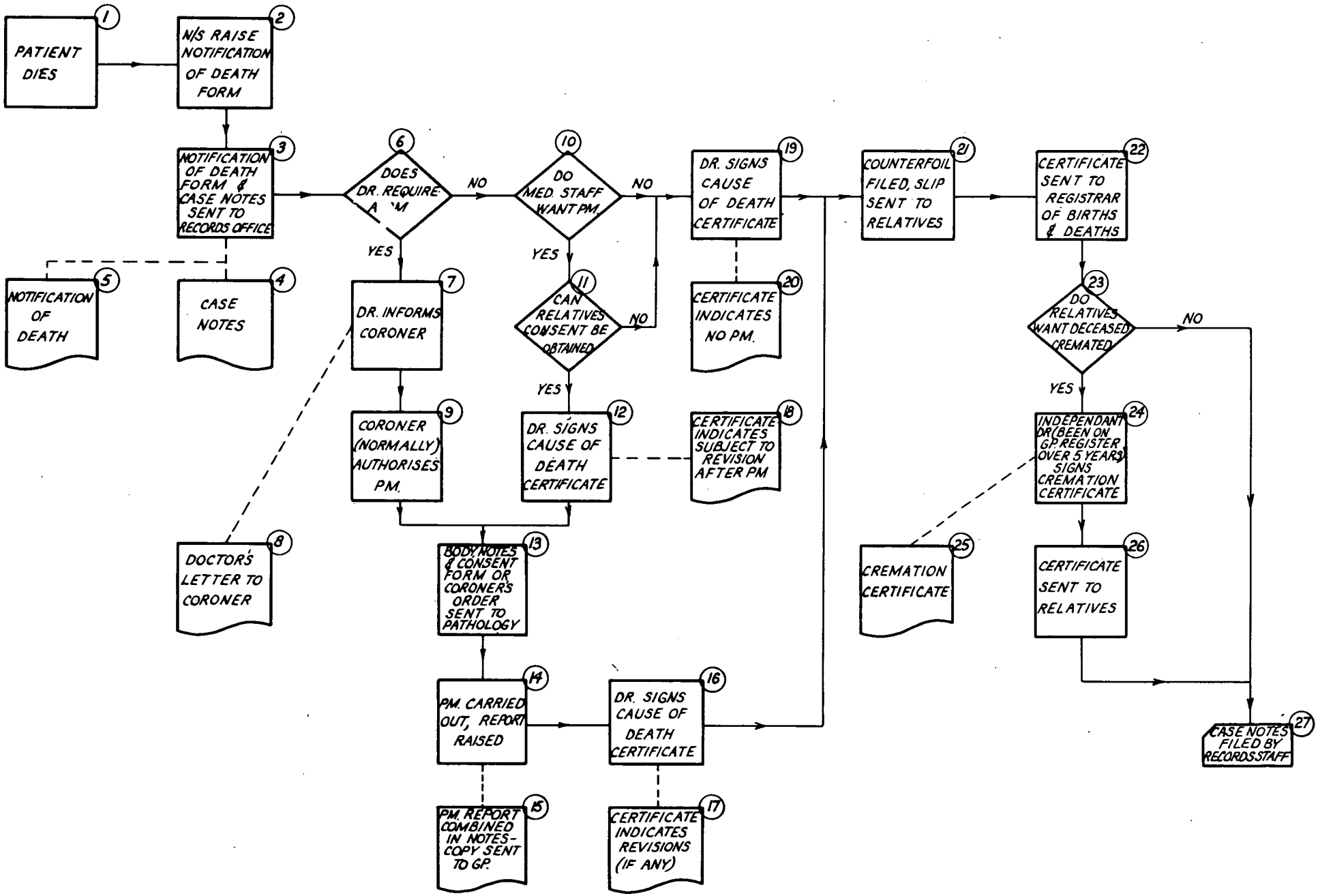



CONT.D (FROM PAGE 1)
33
N/S INFORM RELATIVES ETC ON PREVIOUS DAY. (PHONE, TELEGRAM OR VERBALLY
34
RELATIVES BRING CLOTHES & COLLECT PATIENT DAY OF DISCHARGE
35
DR. MAKES OUT A DISCHARGE NOTE
36
DISCHARGE NOTE GIVEN TO PATIENT FOR G.P.
37
PATIENT GOES HOME
38
CASE NOTES RETAINED ON WARD FOR COMPLETION OF DISCHARGE SUMMARY/ LETTER
39
RECORDS STAFF SEE IF NOTES REQUIRED FROM CLINIC BEFORE DISCHARGE
YES
41
RECORDS STAFF TAKE FROM WARD
42
NOTES GO TO CLINIC AND FOLLOW O.P. PROCEDURES
NO
40
DOES DR COMPLETE SUMMARY ?
NO
43
RECORDS STAFF TAKE NOTES FROM WARD
44
CASE NOTES FILED
YES
45
H/O (DR) WRITES SUMMARY NOTES GO TO MED SECRETARIES
46
SUMMARY WRITTEN BY H/O GIVEN TO MED. SECRETARY FOR DESPATCH
47
SUMMARY GIVEN TO MED. SECRETARIES TO TYPE & DESPATCH
48
CASE NOTES NOW COMPLETED
49
DISCHARGE SUMMARY/ LETTER COPY IN CASE NOTES
50
COPY TO G.P.
55
CASE NOTES FILED FOR 20 YEARS AT PRESENT
52
RECORD STAFF INDEX CASE NOTES IN DIAGNOSTIC INDEX
51
DO RECORDS STAFF KEEP A DIAGNOSTIC INDEX
NO
53
DIAGNOSTIC INDEX
54
RECORDS STAFF FILE CASE NOTES
56
RECORDS STAFF MAKE UP RETURNS
57
SBH.3, SH.3
SB1
CANCER FOLLOW-UP
FILEWORK ENQUIRY
IN PATIENT ENQUIRY
PRIVATE PATIENT RETURNS
RELIGIOUS RETURNS
AMBULANCE RETURNS
RECORD LINKAGE RETURNS
HOSPITAL ACTIVITY ANALYSIS

Procedures in the event of a patient's death

GENERAL

The nursing staff make out a notification of death form and send it with the case notes to the records officer. The house officer or doctor examine the records in the Records Office and then decides whether he can sign a Medical Cause of Death Certificate or whether he should report the case to the coroner. Junior house officers are advised in this matter by the records officer and will normally accept his recommendation.


1
PATIENT DIES
2
N/S RAISE NOTIFICATION OF DEATH FORM
3
NOTIFICATION OF DEATH FORM & CASE NOTES SENT TO RECORDS OFFICE
4
CASE NOTES
5
NOTIFICATION OF DEATH
6
DOES DR. REQUIRE A PM
YES
NO
7
DR. INFORMS CORONER
8
DOCTOR'S LETTER TO CORONER
9
CORONER (NORMALLY) AUTHORISES PM.
10
DO MED. STAFF WANT PM.
YES
NO
11
CAN RELATIVES CONSENT BE OBTAINED
YES
NO
12
DR. SIGNS CAUSE OF DEATH CERTIFICATE
13
BODY, NOTES & CONSENT FORM OR CORONER'S ORDER SENT TO PATHOLOGY
14
PM. CARRIED OUT, REPORT RAISED
15
PM. REPORT COMBINED IN NOTES - COPY SENT TO GP.
16
DR. SIGNS CAUSE OF DEATH CERTIFICATE
17
CERTIFICATE INDICATES REVISIONS (IF ANY)
18
CERTIFICATE INDICATES SUBJECT TO REVISION AFTER PM
19
DR. SIGNS CAUSE OF DEATH CERTIFICATE
20
CERTIFICATE INDICATES NO PM.
21
COUNTERFOIL FILED, SLIP SENT TO RELATIVES
22
CERTIFICATE SENT TO REGISTRAR OF BIRTHS & DEATHS
23
DO RELATIVES WANT DECEASED CREMATED
NO
YES
24
INDEPENDANT DR (BEEN ON GP REGISTER OVER 5 YEARS) SIGNS CREMATION CERTIFICATE
25
CREMATION CERTIFICATE
26
CERTIFICATE SENT TO RELATIVES
27
CASE NOTES FILED BY RECORDS STAFF

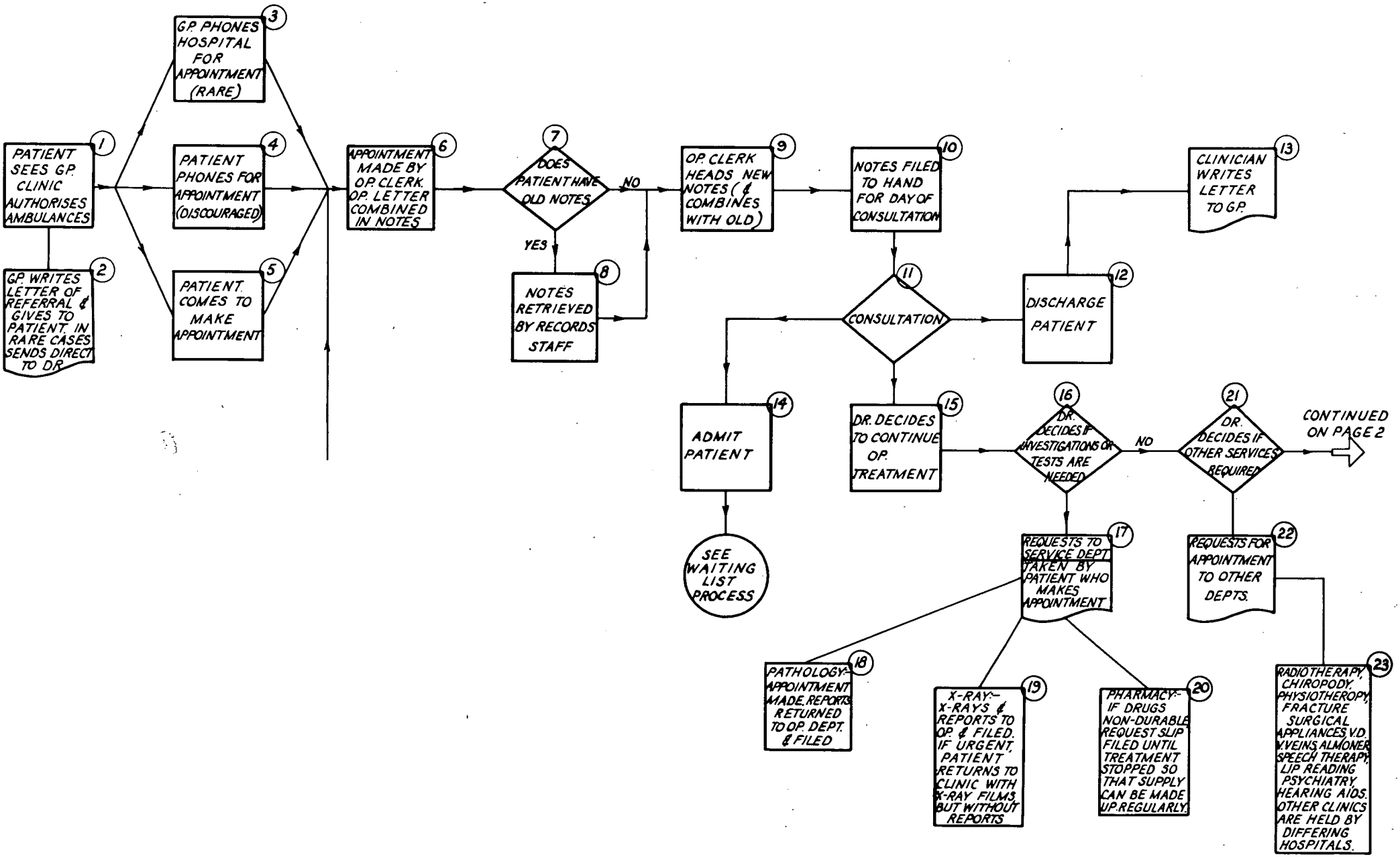
Outpatient procedures

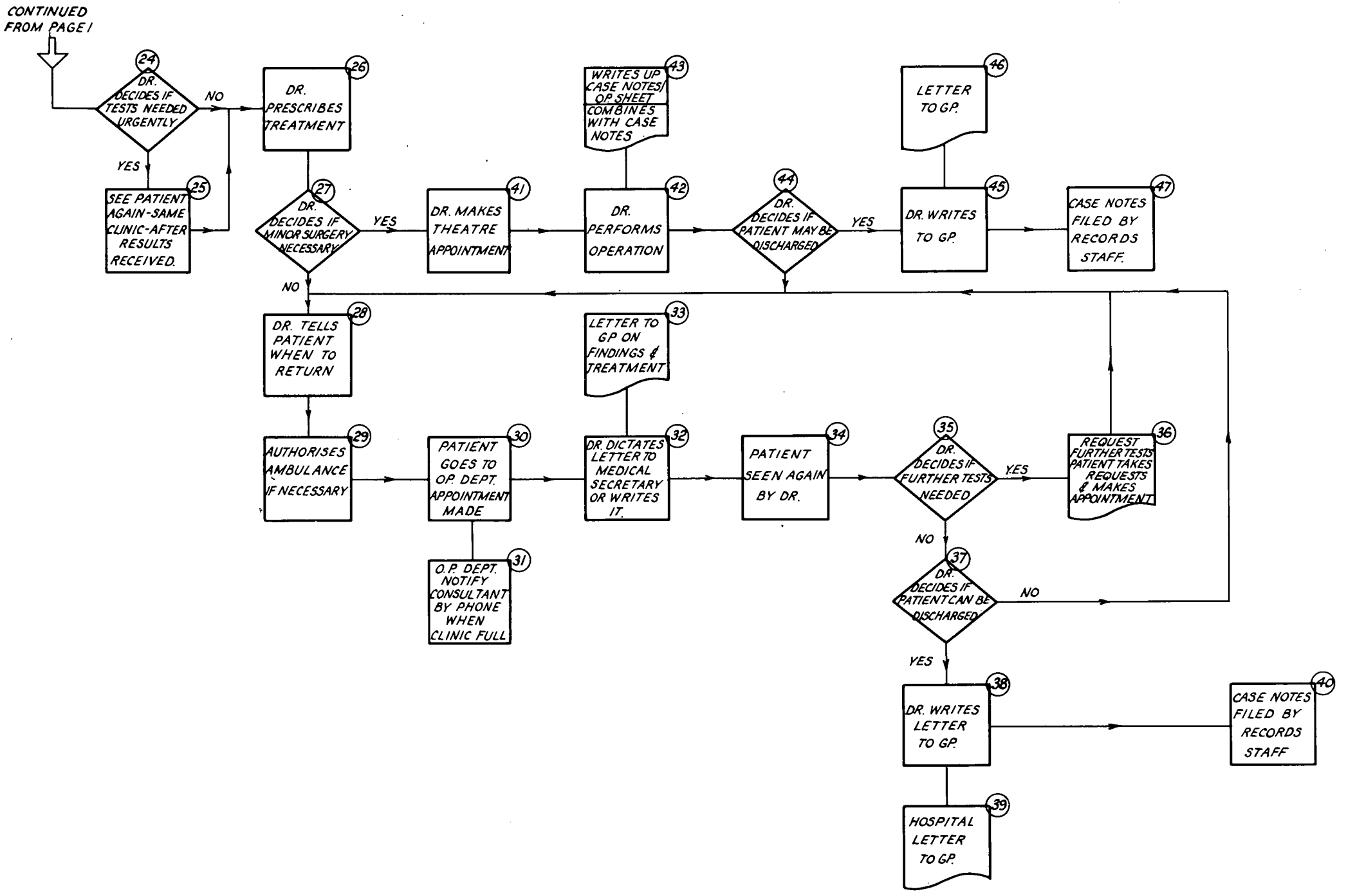
DELAYS

Considerable delay and annoyance both to patients and hospital staff arose from the bottlenecks and delays in the provision of supporting services such as X-ray and Pathology. It is thought that in a computer-based appointment system it would be possible to significantly reduce this by assessing the probable load on such services when allocating appointments. Whilst this would be possible with a clerical system, the effort involved is judged to be prohibitive.

APPOINTMENTS

The practice of telephoning for appointments is discouraged by both hospitals.

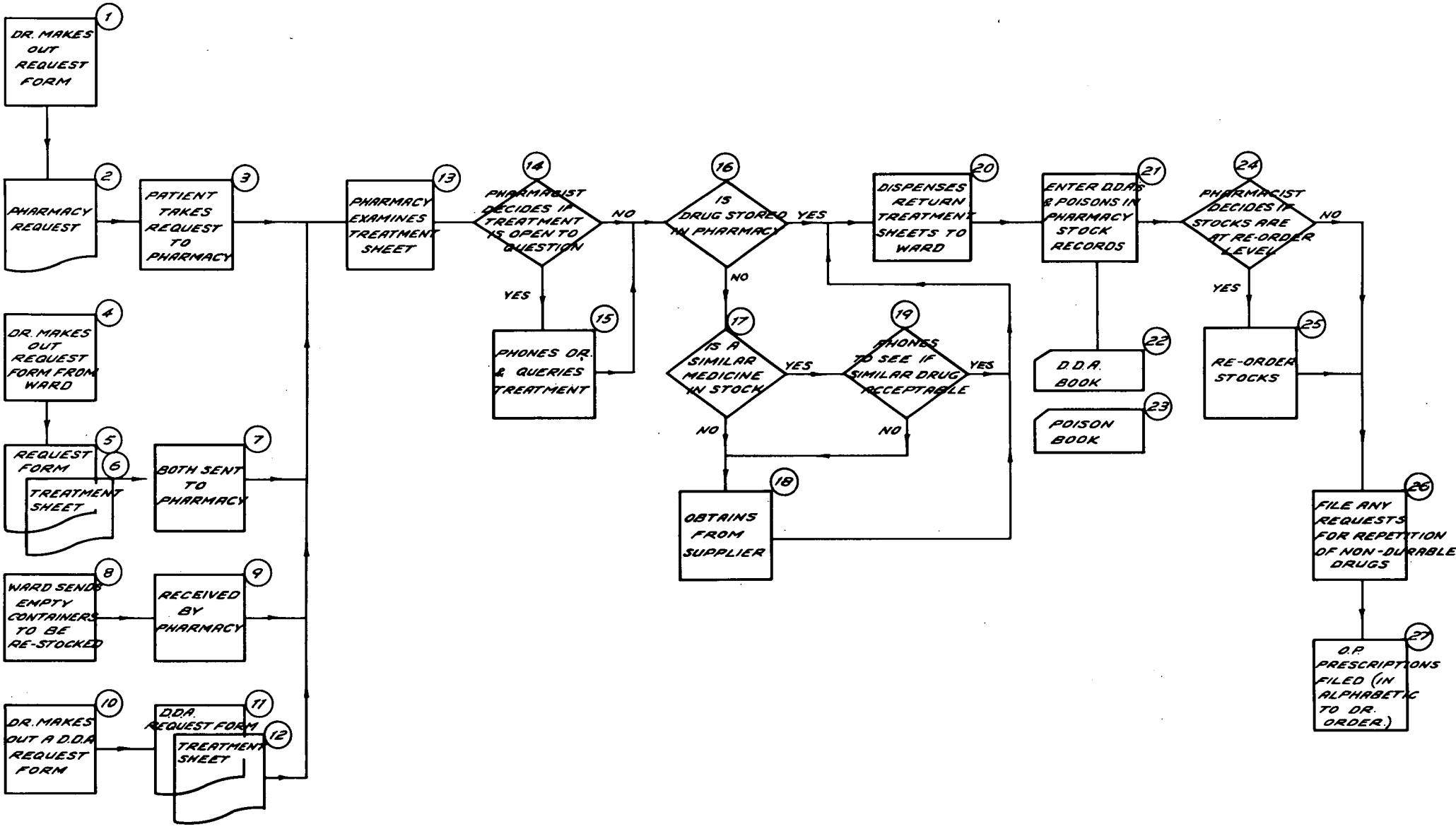

1
PATIENT SEES G.P. CLINIC AUTHORISES AMBULANCES
2
G.P. WRITES LETTER OF REFERRAL & GIVES TO PATIENT. IN RARE CASES SENDS DIRECT TO DR.
3
G.P. PHONES HOSPITAL FOR APPOINTMENT (RARE)
4
PATIENT PHONES FOR APPOINTMENT (DISCOURAGED)
5
PATIENT COMES TO MAKE APPOINTMENT
6
APPOINTMENT MADE BY O.P. CLERK. O.P. LETTER COMBINED IN NOTES
7
DOES PATIENT HAVE OLD NOTES
YES
NO
8
NOTES RETRIEVED BY RECORDS STAFF
9
O.P. CLERK HEADS NEW NOTES (& COMBINES WITH OLD)
10
NOTES FILED TO HAND FOR DAY OF CONSULTATION
11
CONSULTATION
12
DISCHARGE PATIENT
13
CLINICIAN WRITES LETTER TO G.P.
14
ADMIT PATIENT
SEE WAITING LIST PROCESS
15
DR. DECIDES TO CONTINUE O.P. TREATMENT
16
DR. DECIDES IF INVESTIGATIONS OR TESTS ARE NEEDED
NO
21
DR. DECIDES IF OTHER SERVICES REQUIRED
CONTINUED ON PAGE 2
17
REQUESTS TO SERVICE DEPT. TAKEN BY PATIENT WHO MAKES APPOINTMENT
18
PATHOLOGY:- APPOINTMENT MADE. REPORTS RETURNED TO O.P. DEPT. & FILED
19
X-RAY:- X-RAYS & REPORTS TO O.P. & FILED. IF URGENT, PATIENT RETURNS TO CLINIC WITH X-RAY FILMS, BUT WITHOUT REPORTS
20
PHARMACY:- IF DRUGS NON-DURABLE REQUEST SLIP FILED UNTIL TREATMENT STOPPED SO THAT SUPPLY CAN BE MADE UP REGULARLY.
22
REQUESTS FOR APPOINTMENT TO OTHER DEPTS.
23
RADIOTHERAPY, CHIROPODY, PHYSIOTHEROPY, FRACTURE SURGICAL APPLIANCES, V.D. V. VEINS, ALMONER, SPEECH THERAPY, LIP READING, PSYCHIATRY, HEARING AIDS. OTHER CLINICS ARE HELD BY DIFFERING HOSPITALS.


CONTINUED FROM PAGE 1
24
DR. DECIDES IF TESTS NEEDED URGENTLY
NO
YES
25
SEE PATIENT AGAIN - SAME CLINIC - AFTER RESULTS RECEIVED.
26
DR. PRESCRIBES TREATMENT
27
DR. DECIDES IF MINOR SURGERY NECESSARY
YES
41
DR. MAKES THEATRE APPOINTMENT
43
WRITES UP CASE NOTES/ OP SHEET COMBINES WITH CASE NOTES
42
DR. PERFORMS OPERATION
44
DR. DECIDES IF PATIENT MAY BE DISCHARGED
YES
46
LETTER TO G.P.
45
DR. WRITES TO G.P.
47
CASE NOTES FILED BY RECORDS STAFF.
NO
28
DR. TELLS PATIENT WHEN TO RETURN
29
AUTHORISES AMBULANCE IF NECESSARY
30
PATIENT GOES TO OP DEPT. APPOINTMENT MADE
31
O.P. DEPT. NOTIFY CONSULTANT BY PHONE WHEN CLINIC FULL
33
LETTER TO GP ON FINDINGS & TREATMENT
32
DR. DICTATES LETTER TO MEDICAL SECRETARY OR WRITES IT.
34
PATIENT SEEN AGAIN BY DR.
35
DR. DECIDES IF FURTHER TESTS NEEDED
YES
36
REQUEST FURTHER TESTS PATIENT TAKES REQUESTS & MAKES APPOINTMENT
NO
37
DR. DECIDES IF PATIENT CAN BE DISCHARGED
NO
YES
38
DR. WRITES LETTER TO GP.
40
CASE NOTES FILED BY RECORDS STAFF
39
HOSPITAL LETTER TO GP.

Pharmacy procedures

GENERAL

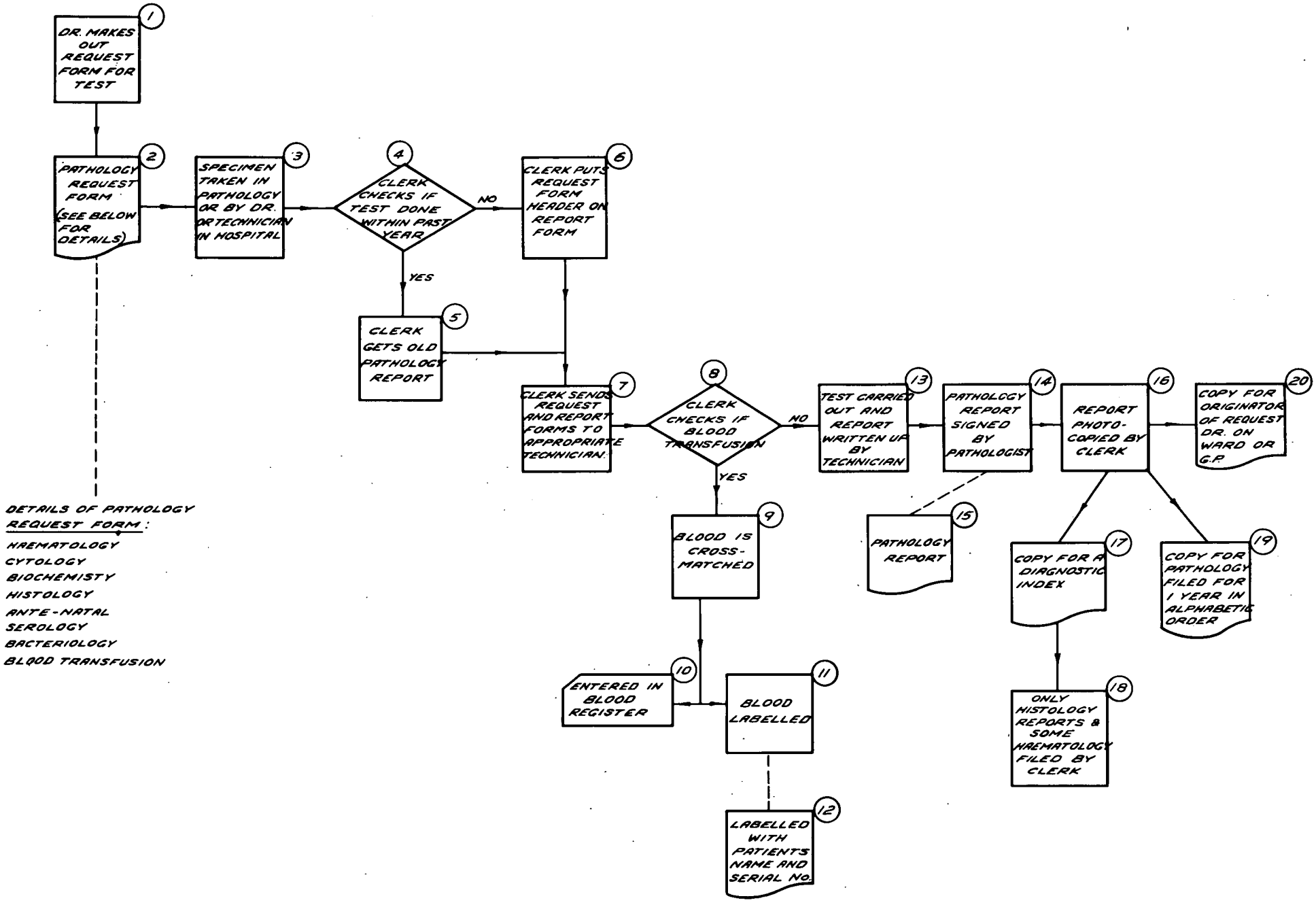
When the pharmacist receives the treatment sheet and request form he should ideally check them for drug incompatibilities, check the size of dosage and frequency of dosage. Pressure of work seldom allows this to be done in practice. Should the pharmacist discover any incompatibility or anything that is open to doubt he will telephone the doctor and query the prescription. If the doctor agrees to change the treatment then the new medicine is supplied and the treatment sheet altered by the doctor.


1
DR. MAKES OUT REQUEST FORM
2
PHARMACY REQUEST
3
PATIENT TAKES REQUEST TO PHARMACY
4
DR. MAKES OUT REQUEST FORM FROM WARD
5
REQUEST FORM
6
TREATMENT SHEET
7
BOTH SENT TO PHARMACY
8
WARD SENDS EMPTY CONTAINERS TO BE RE-STOCKED
9
RECEIVED BY PHARMACY
10
DR. MAKES OUT A D.D.A. REQUEST FORM
11
D.D.A. REQUEST FORM
12
TREATMENT SHEET
13
PHARMACY EXAMINES TREATMENT SHEET
14
PHARMACIST DECIDES IF TREATMENT IS OPEN TO QUESTION
NO
YES
15
PHONES DR. & QUERIES TREATMENT
16
IS DRUG STORED IN PHARMACY
YES
NO
17
IS A SIMILAR MEDICINE IN STOCK
YES
NO
19
PHONES TO SEE IF SIMILAR DRUG ACCEPTABLE
YES
NO
18
OBTAINS FROM SUPPLIER
20
DISPENSES RETURN TREATMENT SHEETS TO WARD
21
ENTER D.D.A.'S & POISONS IN PHARMACY STOCK RECOROS
22
D.D.A. BOOK
23
POISON BOOK
24
PHARMACIST DECIDES IF STOCKS ARE AT RE-ORDER LEVEL
NO
YES
25
RE-ORDER STOCKS
26
FILE ANY REQUESTS FOR REPETITION OF NON-DURABLE DRUGS
27
O.P. PRESCRIPTIONS FILED (IN ALPHABETIC TO DR. ORDER.)

Pathology procedures

GENERAL

If the test is for general diagnostic purposes, it is carried out in the laboratory and the results are entered on the report form, which is then signed by the pathologist. The report is photocopied and one copy is filed in pathology for a period of twelve months. In some instances - for example with all histology reports, some haematology tests, or in cases of unusual clinical interest - a second copy is filed by the clerk to form a departmental diagnostic index for research purposes.


1
DR. MAKES OUT REQUEST FORM FOR TEST
2
PATHOLOGY REQUEST FORM (SEE BELOW FOR DETAILS)
3
SPECIMEN TAKEN IN PATHOLOGY OR BY DR. OR TECHNICIAN IN HOSPITAL
4
CLERK CHECKS IF TEST DONE WITHIN PAST YEAR
NO
YES
5
CLERK GETS OLD PATHOLOGY REPORT
6
CLERK PUTS REQUEST FORM HEADER ON REPORT FORM
7
CLERK SENDS REQUEST AND REPORT FORMS TO APPROPRIATE TECHNICIAN.
8
CLERK CHECKS IF BLOOD TRANSFUSION
NO
YES
9
BLOOD IS CROSS-MATCHED
10
ENTERED IN BLOOD REGISTER
11
BLOOD LABELLED
12
LABELLED WITH PATIENTS NAME AND SERIAL No.
13
TEST CARRIED OUT AND REPORT WRITTEN UP BY TECHNICIAN
14
PATHOLOGY REPORT SIGNED BY PATHOLOGIST
15
PATHOLOGY REPORT
16
REPORT PHOTO-COPIED BY CLERK
17
COPY FOR A DIAGNOSTIC INDEX
18
ONLY HISTOLOGY REPORTS & SOME HAEMATOLOGY FILED BY CLERK
19
COPY FOR PATHOLOGY FILED FOR 1 YEAR IN ALPHABETIC ORDER
20
COPY FOR ORIGINATOR OF REQUEST DR. ON WARD OR G.P.
DETAILS OF PATHOLOGY REQUEST FORM:
HAEMATOLOGY
CYTOLOGY
BIOCHEMISTY
HISTOLOGY
ANTE-NATAL
SEROLOGY
BACTERIOLOGY
BLOOD TRANSFUSION

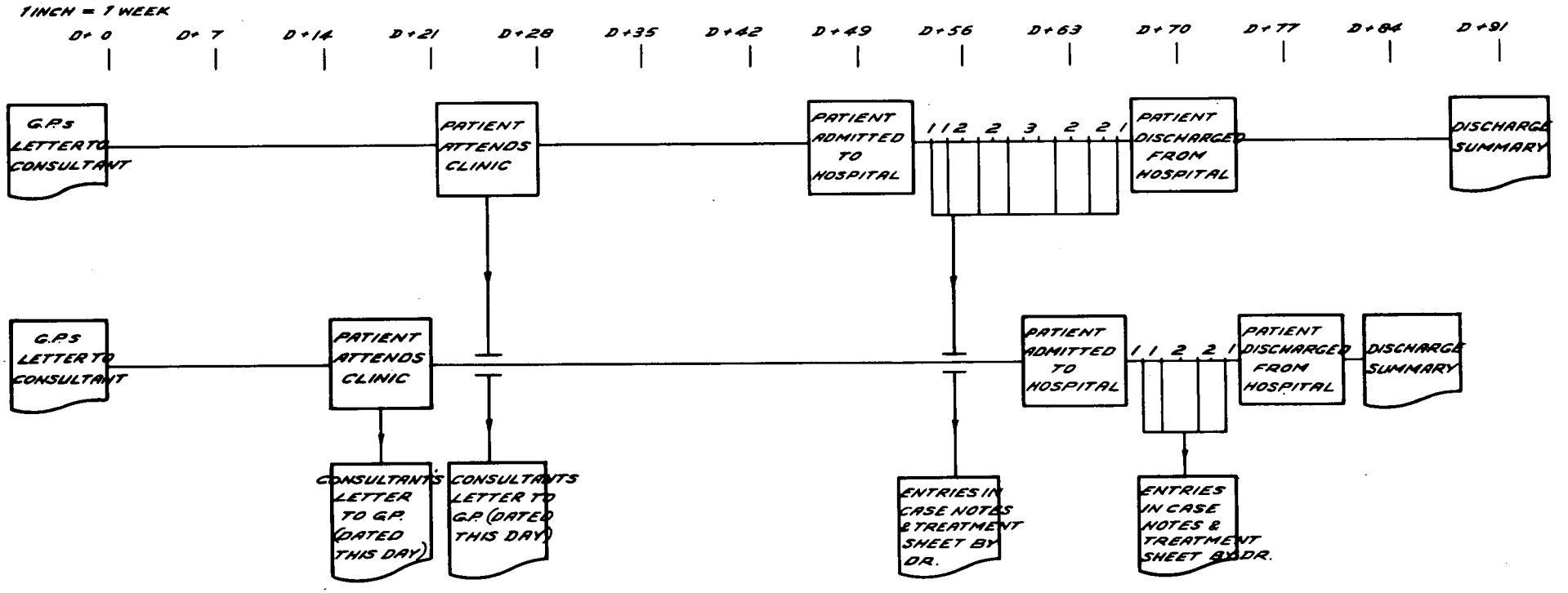
Time scale chart for two selected patients

This chart attempts to show the sequence of events, from the G. P's letter of reference to the writing of the Discharge Summary, for two patients. No attempt is made to suggest that these are in any way representative of all patients. For example, the infinite variations make it impossible to generalise in regard to the length of time a patient may wait from making the first out-patient appointment to his final discharge. This is, of course, subject to the size of the waiting list the consultant has, both for his out-patient clinics and for hospital admission, and is further dependent on the number of accident cases that are admitted to the hospital.

The visits by a doctor to a patient are taken from entries in either the case notes or the treatment sheets. They may in fact have visited the patients at other times, but no entry was made in the case notes (presumably because the condition was unchanged).

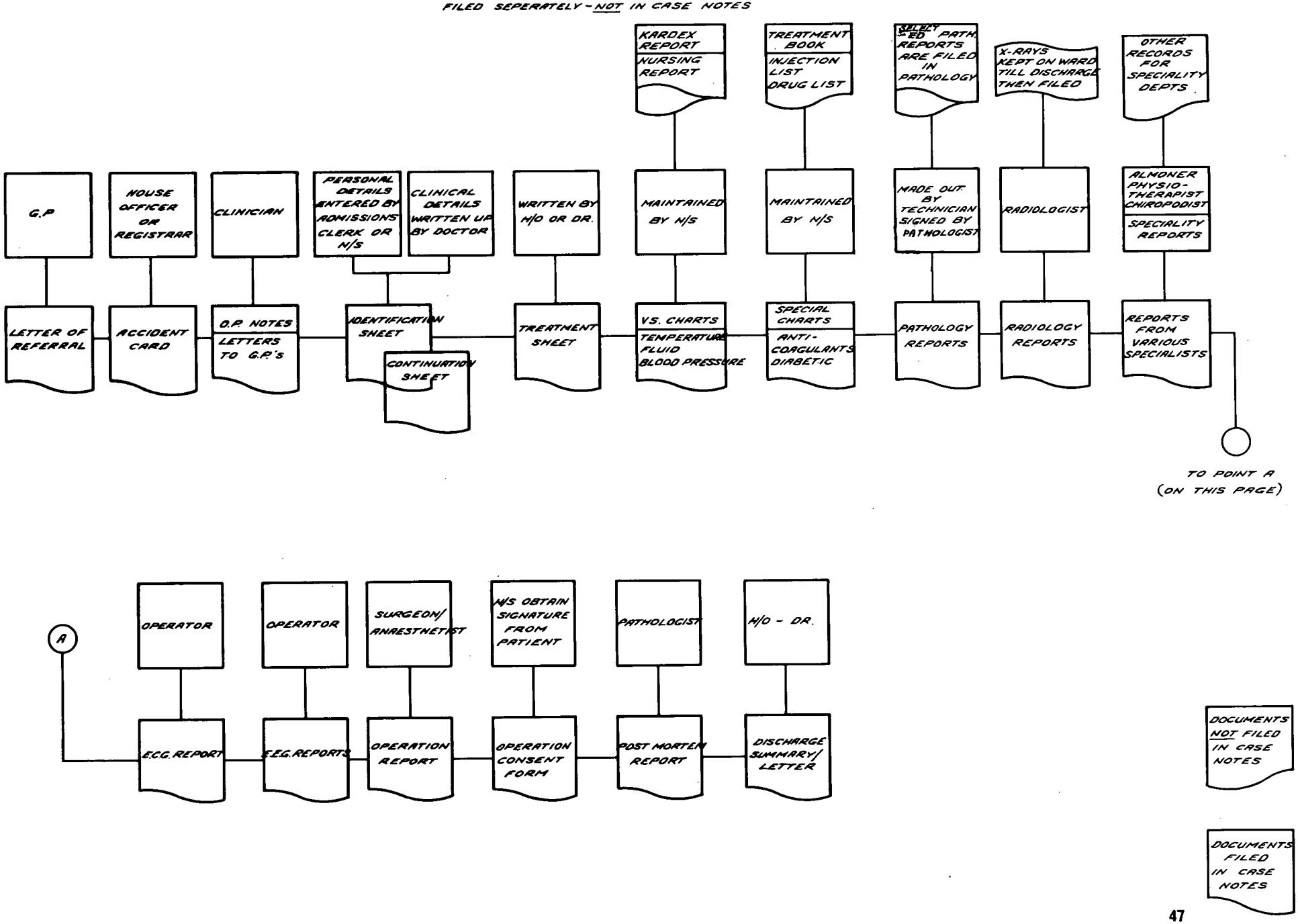
A further reservation must be made, namely that this chart is based on the dates of documented entries in the case notes, e.g. the date on a discharge summary need not necessarily be the date that the patient was discharged. An example was found where a discharge summary was dated seven days prior to the actual discharge of the patient, who had suffered a slight relapse shortly before his scheduled departure. There were an appreciable number of cases where a difference of one or two days was noted.

TIME SCALE CHART SHOWING THE PROGRESS OF TWO PATIENTS THROUGH HOSPITAL



Documents filed in case notes

This chart shows the various major elements of the records encountered in the study, their originators and storage point.


FILED SEPERATELY - NOT IN CASE NOTES
G.P
HOUSE OFFICER OR REGISTRAR
CLINICIAN
PERSONAL DETAILS ENTERED BY ADMISSIONS CLERK OR N/S
CLINICAL DETAILS WRITTEN UP BY DOCTOR
WRITTEN BY N/O OR DR.
KARDEX REPORT
NURSING REPORT
MAINTAINED BY N/S
TREATMENT BOOK
INJECTION LIST
DRUG LIST
MAINTAINED BY N/S
X-RAY & ED PATH. REPORTS ARE FILED IN PATHOLOGY
MADE OUT BY TECHNICIAN SIGNED BY PATHOLOGIST
X-RAYS KEPT ON WARD TILL DISCHARGE THEN FILED
RADIOLOGIST
OTHER RECORDS FOR SPECIALITY DEPTS
ALMONER PHYSIO-THERAPIST CHIROPODIST
SPECIALITY REPORTS
LETTER OF REFERRAL
ACCIDENT CARD
O.P. NOTES
LETTERS TO G.P.'s
IDENTIFICATION SHEET
CONTINUATION SHEET
TREATMENT SHEET
V.S. CHARTS
TEMPERATURE FLUID BLOOD PRESSURE
SPECIAL CHARTS
ANTI-COAGULANTS DIABETIC
PATHOLOGY REPORTS
RADIOLOGY REPORTS
REPORTS FROM VARIOUS SPECIALISTS
TO POINT A (ON THIS PAGE)
A
OPERATOR
OPERATOR
SURGEON/ ANAESTHETIST
N/S OBTAIN SIGNATURE FROM PATIENT
PATHOLOGIST
N/O - DR.
E.C.G. REPORT
E.E.G. REPORTS
OPERATION REPORT
OPERATION CONSENT FORM
POST MORTEM REPORT
DISCHARGE SUMMARY/ LETTER
DOCUMENTS NOT FILED IN CASE NOTES
DOCUMENTS FILED IN CASE NOTES