

WAITING LIST ANALYSIS OF A TERTIARY CARE HOSPITAL

CENTRE FOR NEWFOUNDLAND STUDIES

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WAITING LIST ANALYSIS OF A
TERTIARY CARE HOSPITAL

BY



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ABSTRACT

The research for this thesis has 2 components; a descriptive analysis of the waiting list for a tertiary care hospital for the fiscal year, 1983/84, and a chart review of patients who were admitted to hospital after being on the waiting list for extended time periods.

For the descriptive analysis of the waiting list, 3,275 cases were analyzed. 2,886 of the cases were admitted to hospital. The median wait time for those patients was 9 days. There were variances in waiting time for different medical services. At the end of the study period 589 patients remained on the waiting list. 51 percent of those had waited longer than 3 months for admission.

The chart review was conducted on the most frequent occurring diagnoses in the services of orthopaedics, neurosurgery and cardiovascular surgery. Patients in this review had waited 0 - 30 days, 30 - 90 days and 90+ days for admission. Criteria were used to determine differences, if any, in the process of care during hospitalization for the patients admitted with the selected diagnoses.

The results of the analysis showed a difference for one criteria only, length of stay was longest across the three groups for those who waited 30-90 days.

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CHAPTER I

INTRODUCTION

It is accepted that Canadians have one of the best medical care systems in the world. The system is largely publicly funded and accessible to all, regardless of financial status. A basic premise of governments' financing arrangements is that access to hospital and medical services should not be dependent upon income.

Because the hospital is the core institutional provider of health care, and inpatient hospitalization costs have escalated rapidly, hospitals are in an increasingly vulnerable position for cost reduction by government.

According to the Report of the Royal Commission Looking into Hospital and Nursing Home Costs (February 1984), the cost of operating all Newfoundland and Labrador hospitals in 1983/84 would exceed \$320 million. In 1972 the total spent on hospitals was less than \$60 million.

Increases in health expenditures arise from various sources, changes in population size, changes in quantity of services per capita, changes in the cost and quality of the services provided. Increased labour costs per patient day has been one of the major reasons for increased hospital costs. The growth in the number of physicians and the trend toward specialization have increased hospital usage. Technological change, new diagnostic tests and new therapeutic procedures

are being developed almost daily. These frequently require additional equipment and drugs, contributing to hospital cost increases (Soderstrom, L. 1978). Because of rising costs and changes in cost sharing agreements with the federal government, funding problems are likely to become more critical in the future for the provincial health department and hospitals will be faced with the ultimate threat - reduced funds.

The general public and particularly critics of government and the health care system use hospital waiting lists as an indicator of how well the health care needs of the province are being met. The assumption is made that the size of the waiting list or length of time a patient must wait for admission relates to the adequacy of resources for treatment. Long waiting lists or lengthy waiting periods are taken as an indication that more resources are required.

Concern over the increase in the hospital's waiting list over the past few years, an increase in new programs which are mostly unfunded, and a recommendation by the Royal Commission looking into Hospital and Nursing Home Costs 1984 for the closure of hospital beds prompted this research. The hospital has always kept a waiting list, but information on length of time patients waited for admission to the different specialities was not known. This study was conducted to provide base line statistics for waiting time and to provide general information about the hospital's waiting list.

The study hospital is a 342 bed teaching facility with major services in general surgery, cardiac surgery, neurosurgery, orthopaedics, general medicine, the medical subspecialties, psychiatry and radiation oncology. It is the major trauma centre for the province. Much of the health care provided to the community is on an ambulant care basis through 100 specialist clinics per week. These clinics include all major medical and surgical subspecialties as well as clinics in psychiatry and gynaecology. Approximately 45,000 patients are seen per year in the specialist clinics, one third of these are from the St. John's area.

The study hospital has a long tradition of service to the City of St. John's and to the province as a whole. Existing for a century as the largest hospital operated by the government, a pattern of referrals from other hospitals has developed.

Referrals to the hospital from areas of the province already serviced by regional hospitals represent 34% of the total admissions. These patients are referred for services not duplicated elsewhere in the Province. 35% of the patients are from St. John's and its surrounding suburbs and 31% from the Eastern Avalon excluding St. John's. The hospital has a major role in the provision of health care to the people of the province.

Research Questions

The purpose of this research is to conduct an analysis of the waiting list (list of patients waiting for admission) for the study hospital, the main teaching facility and tertiary care hospital in Newfoundland.

1. To describe the waiting list for each service using the variables sex, admission category, age group and health care district.
2. To determine the median waiting time for admission to the services by sex, admission category, age group and health care district.
3. To determine differences if any in the process of care during hospitalization for patients who have waited periods of 0-30 days, 31-90 days and longer than 90 days for admission to hospital.

CHAPTER II

LITERATURE REVIEW

The literature review considers two major Canadian studies; one conducted in Saskatchewan, 1983, and the other in Nova Scotia, 1981. Also reviewed were articles from various medical journals, with emphasis on problems with waiting lists, and offering alternatives for the waiting list management in England's Health Care System.

The Saskatchewan study was initiated to determine differences in waiting lists for Saskatoon and Regina hospitals. Other factors studied were waiting list demographic characteristics, differences in urban and rural patients, services and procedures patients were waiting for and differences in patients length of stay in the respective hospitals. Some of the findings were:

- 1) There was no significant difference in the age or sex distribution of surgical waiting lists.
- 2) There was no difference in wait time for admission to hospital for urban and rural patients, although a large percentage of those waiting for the Saskatoon hospital were from outside the City.
- 3) The length of time waiting was generally in proportion to the number of patients on the waiting list in each service.
- 4) The Committee recommended the development of a

standardized data base to allow collection and maintenance of readily comparable information by all hospitals.

The Nova Scotia study reviewed the waiting list to four Halifax hospitals. The purpose of the study was to determine the demands placed on the various speciality services within the hospitals and to compare the demands to the bed availability in each service. In this study a model has been set up to relate the available beds of each service, to the demands of the waiting list of patients in the urgent and elective categories after allowing for beds for the admission of emergency patients.

Weaver, P.G. (1981) defined terms used to describe and discuss waiting lists. He also recommended development of standardized performance indicators that could be used to measure and describe waiting times so that comparisons could be made across hospitals. A more recent article in the Medical Post (1984), Dr. Jean Charboneau, President of the Association of Independent Physicians, discussed the results of a survey conducted by the Association giving a dismal picture of long waiting periods for patients needing surgery.

It is not surprising that many of the early studies on waiting lists were conducted in England after the introduction of the National Health Insurance when waiting lists for hospitals increased to over 500,000. These articles addressed two separate facets of waiting lists:

- 1) Definition and discussion of the problem of waiting lists in England, and
- 2) Development of alternatives to hospital admission and recommendations for improved through put of patients.

Lester, J. (1978) in his discussion of the long wait for patients requiring hospital inpatient treatment cited several reasons for delays in admission. Two of these were chronic underfunding of the National Health System, and the policy of diverting funds from the acute hospital sector to various aspects of community care. Other factors include the terms on which both consultants and nursing staff are employed and the relationships of these professionals with the auxillary staff who work in the operating rooms of hospitals.

Lindsay, G. and Fugenbaum, B. (1984) developed a model in which waiting lists or queues function as a rationing process. The theory implies that the rate of joining the National Health Service waiting list will be negatively related to expected delay in supply and to the rate at which demand diminished over time. Supply, on the other hand, was hypothesized to respond positively to expected delay.

Sanderson, H. (1982) discussed the implication of admission thresholds on the waiting list size. He defined admission thresholds as that time in a patient's wait for admission in which his symptoms become so severe that the benefits of treatment are judged to outweigh the risks and

discomfort of treatment. At this stage the patient would be admitted, however, there are methodological problems in constructing scales of severity and in validating them against external standards. At the time of his writing there were no useful criteria developed to measure severity as an indicator of the threshold of admission.

In Britain, 95 percent of patients who are on a waiting list are waiting for elective surgery. Surgical care is, therefore, a major concern. A Department of Health and Social Services study (1981) showed that 75 percent of patients waiting for orthopaedic surgery had waited longer than 1 month for admission to hospital. West, R. and McKibbin, B. (1982) reported that one-third of orthopaedic patients failed to keep outpatient appointments and only 30 percent wanted to stay on the waiting list after 2 years.

Two explanations were offered for the large numbers of patients not attending: (1) they were able to get care in another area, the private sector; or (2) they no longer suffered from the symptoms and so hospitalization was no longer considered necessary. Patients on the waiting lists required similar types of surgery as were being performed in the private sector. Those who could afford the private cost or have supplemental insurance could avoid the waiting lists. Cullis, J. and Jones, P. (1985) suggested that a subsidy be provided by the National Health Service (N.H.S.) for patients to have selected surgical procedures in the private sector.

Their analysis showed that the policy would be less costly than an alternative policy of direct expansion of the N.H.S. and would improve the delivery of care to all patients. Grimes, D. (1984) suggested that physicians are keeping waiting lists artificially long to force patients to escape the waiting lists and purchase care from the same N.H.S. physicians, because the wait is not so long in the private sector.

Mulvey, B. and Cline, U. (1985) described the effect on waiting lists of the creation of a temporary hip replacement unit at Eastbourne District General Hospital, where waiting times for this procedure was at best 9 months and at worst 4 years, and both waiting lists and waiting times were increasing. During the project a total of 98 patients had hip replacements. Waiting times for hip replacements were reduced and at the end of the exercise only 21 patients were left on the waiting list who had waited over 1 year for the operation. The clinical and financial results of the exercise showed that waiting list problems can be improved by the provision of temporary units.

Betthell, J.F. (1970) analysed the waiting list for St. Thomas Hospital in London. His emphasis was on the characteristics of the patients rather than on the list size. Waiting times, for example, were examined and found to depend strongly on age, older patients being admitted more quickly. The percentage of patients failing to arrive when sent for are

analysed by amount of notice given, time on the waiting list and method of communication. Booked cases were discussed, and the list was reviewed to remove from the list patients no longer waiting.

Two questions relating to waiting lists need to be answered. What is an appropriate wait for a specific service? Is there a change in the process of care for the patient based on the length of time he has waited for admission to hospital?

Only one study, that of Bloom, B. and Fenderick, A. (1984) gives any kind of indication of waiting times for admission to hospital in the English National Health Service (Figure VII). The median wait time for similar services at the study hospital are included in this figure. The overall median wait time in the English System for all services was 39 days; for the study hospital it was 9 days.

All major teaching hospitals in Canada, 15 in total, were contacted early in the study period. They were requested to send copies of their waiting lists; waiting times, if known were also requested. All the hospitals responded. In most cases there were long waiting lists, but waiting times were known in very few cases (Figure V, Appendix I).

CHAPTER III

RESEARCH DESIGN

This study has 2 components. The first is a descriptive analysis for the hospital and for each medical and surgical service. Tables were prepared using frequencies and percentages for patients admitted using the following variables: sex, age group, admission category, health care district and grouped waiting times and by International Classification of Diseases (I.C.D.) diagnosis grouping. Tables were also prepared showing measures of central tendency for the same variables. Tables were also prepared using the same variables for the group of patients who were not admitted during the study period.

The second component studied the most frequent occurring diagnosis in 3 of the surgical services where median wait was longer than the median for the hospital. The length of stay in the service of neurology was also longer than the median for the hospital. A computer printout of the diagnoses for the service of neurology did not show any one diagnosis with numbers sufficient to conduct further analysis. Thus surgical services were then chosen for the study. Criteria were developed to determine differences, if any, in the process of care during hospitalization for patients who have waited 0-30 days, 31-90 days, and longer than 90 days for admission to hospital.

Methodology

The study period was the fiscal year 1983-84, April 1, 1983 to March 31, 1984. All requests for admission to the study hospital for the year were documented on 5 x 8 index cards (Figure I) using the following variables (Figure II), observation number, medical care plan number (referred to as M.C.P.), address or place of residence (later combined into four Health Care Districts, as defined by the Department of Health) (Figure III) age, sex, Medical service, physician, diagnosis (later combined according to the International classification of Diseases (I.C.D.) Diagnostic Grouping (Figure VII)).

These data were entered into the computer and an SPSS-X analysis file was prepared. Statistical analysis, using the SPSS-X package was completed for the waiting list, for the hospital as a whole, and for each individual medical service. The total number of cases logged from the waiting list was 4,117 (Table I). During the study period, 3,501 patients were admitted, 616 were not admitted. All of these cases could not be used for analysis because 642 cases had no booking date documented, and were excluded. Without the booking date information it was impossible to determine how long the patient had waited for admission. 615 of those cases excluded were in the admitted group leaving a total of 2,886 in the admitted group for analysis. 27 were in the not admitted group, with these cases excluded the total cases not admitted

were 589.

To determine if bias would be created in the data analysis by dropping these cases, a comparison was conducted on key variables between the cases with a booking date and those with no booking date, (Appendix I) to see if differences existed. The variables studied were sex, age, admission category, health care district and medical service. The results showed that excluding these cases would not bias the analysis of the remaining cases.

Analysis

Following the exclusion of the 642 cases from the study, 3,475 cases remained for analysis. 589 cases were not admitted during the study period. For the analysis, tables were prepared with frequencies and percentages for those admitted for the variables: sex, age group, admission category, health care district, service and I.C.D. diagnostic group. These tables were prepared for the hospital and for each individual service. Tables were also prepared showing several measures of central tendency and dispersion for waiting times for the admitted group for the same variables.

The not admitted group were analysed using the same variables.

Process of Care Analysis

For the second component, a chart audit was conducted on the most frequent occurring diagnoses in the services of orthopaedics, neurosurgery and cardiovascular surgery. Criteria were developed to determine differences, if any, in the process of care for patients hospitalized following three different waiting periods for admission to hospital expressed as 0-30 days, 31-90 days, 91+ days. The criteria (Appendix III) utilized are, pre-admission outpatient visits, days on waiting list, pre-op days, consults pre-op, post-op days, post-op consults, post-op complications, unplanned return to operating room, days in ICU, CCU or SP, length of stay, post-op clinic visits, unplanned readmission for same problem. The diagnoses selected were analyzed in each of the three services by time waiting for admission expressed as 0-30 days, 31-90 days, 91+ days.

Limitations

This study is limited in a number of ways. The single hospital setting limits generalizability. It is not known how the waiting times for admission to the different services is affected by the unique features and factors that affect the waiting list for this particular hospital.

Because the hospital's referral base is the whole province, and it is the main tertiary and trauma center, the number of emergency admissions are very high, limiting the number of patients that can be admitted from the waiting list.

Patients were categorized as urgent or elective by the physician based on his judgement. There are no specific criteria for defining these categories. It is possible that a physician may classify the majority of his patients as urgent in order to have them admitted more quickly.

Definition of Terms

- Study Period - The fiscal year April 1, 1983 to March 31, 1984.
- Waiting List - A list of patients waiting for admission to hospital, usually listed by physician and by service. At the study hospital a monthly report was compiled listing the number of patients waiting for 1 month, 2 months and greater than 3 months. This information was available by service and by physician.
- Admitted - Those patients listed on the waiting list who were admitted to hospital during the study period, fiscal year 1983-84.
- Not Admitted - These patients remaining on the waiting list at the end of the study period, i.e. - they were not admitted to hospital in the period April 1, 1983 - March 31, 1984.
- Booking Date - Date the physician initiated a request for admission of the patient to hospital. Booking date does not infer a date given for admission. There is no pre-booking in place.

- Waiting Time - The time elapsed from the booking date, to the date the patient was admitted to hospital. Booking slips that did not include the date of booking had to be excluded from the study. (Refer to Appendix I)
- Place of Residence - Communities were grouped according to Health Care Regions as defined by the Department of Health, they are Eastern, Central, Western and Northern Regions. (Map - Figure V, Appendix I)
- M.C.P. Number - The identifying number for billing purposes given to each person registered with the Medical Care Commission. This number is the unique number used to identify patients at the study hospital. All patients charts are filed by M.C.P. number.
- Category of Admission- Defined as Emergency, Urgent or Elective indicating the physicians priority for admission by degree of illness.
- Emergency - Admitted directly to hospital without waiting period.

- Urgent - Usually are placed on the waiting list, waiting time usually up to 5 days.
- Elective - Patients placed on waiting list with no definite wait period for admission to hospital.
- Process of Care - Variables used to measure a patient's process of care for a period of hospitalization.
- Pre-Admission, Outpatient Visits - Number of visits to physician in outpatient department while waiting admission to hospital.
- Days on Waiting List- Number of days the patient waits for admission to hospital after doctor initiates a request for admission.
- Pre-Op Days - Days patient is in hospital prior to going to surgery. Usually patients are admitted the day prior to surgery booking. More than 1 - 2 days pre-op would usually indicate a problem.
- Consults Pre-Op - Consultations to other physicians would indicate a problem and could increase pre-op days.
- Post-Op Days - Days in hospital after surgical procedure has been completed.

- Post-Op Consults - Consultations to other physicians after surgery.
- Post-Op Complication- Problems arising with patient after surgery has been completed, sometimes as a result of the surgery.
- Return to O.R. Unplanned - If patient has to return to O.R. for further surgery as a result of previous surgery.
- Days in I.C.U./ C.C.U. or S.P. - I.C.U. - indicates Intensive Care Unit, all cardiovascular patients spend a minimum of 48 hours in I.C.U. One would not ordinarily expect patients with disc surgery or orthopaedic surgery to go to this unit.
C.C.U. - Coronary Care Unit
S.P. - Special Care Unit.
usually on patients own service, e.g.
- special care unit on neurosurgical service.
- Length of Stay (L.O.S.)- Length of time patient stays in hospital from time of admission to time of discharge.

Post-Op Clinic Visits- Return visits to see physician in outpatient clinic after discharge from hospital.

Unplanned Re-Admission- Same Problem Indicates patient outcome post-surgery has not been as planned.

CHAPTER IV

MEDICAL SERVICE ORGANIZATION

This chapter will describe how the medical services of the hospital are organized and will give a brief description of each.

1. DEPARTMENT OF MEDICINE
 - 1.1 Clinical Teaching Unit I
 - 1.2 Clinical Teaching Unit II
 - 1.3 Clinical Teaching Unit III
 - 1.4 Cardiology
 - 1.5 Neurology
2. DEPARTMENT OF RADIATION ONCOLOGY
3. DEPARTMENT OF PSYCHIATRY
4. DEPARTMENT OF SURGERY
 - 4.1 General Surgery
 - 4.2 Ophthalmology
 - 4.3 Neurosurgery
 - 4.4 Orthopaedics
 - 4.5 Urology
 - 4.6 Cardiovascular Surgery

The Department of Medicine is organized into 5 divisions each with a chief who is responsible to the Chairman of the discipline of Medicine. It is divided geographically into 5 clinical teaching units, 2 of which contain the subspecialties - neurology, and cardiology. The other divisions are Clinical Teaching units 1, 2 and 3, and a clinical investigation unit. For purposes of this analysis all these units will be combined under the service of Medicine.

Following is a brief description of the units included in Medicine. The clinical investigations unit contains 7 beds and is a self care unit open 5 days a week. The unit is staffed by one nurse with one endocrinologist admitting patients. Patients are strictly elective and are admitted on Mondays and discharged on Fridays. Waiting time for patients is about three days. The elective waiting list for medicine includes these patients.

Clinical Teaching Unit 1 is staffed by Internists with expertise in the areas of nephology, respirology, and clinical immunology. There is one general internist in the group. The seven physicians on this service share 17 beds for inpatient treatment.

Clinical Teaching Unit 2 is staffed by internists with expertise in rheumatology, gastroenterology, and clinical pharmacology. There are three physicians sharing 18 inpatient beds.

Clinical Teaching Unit 3 is staffed by internists with

subspecialty expertise in haematology, medical oncology, endocrinology and infectious diseases. There are five physicians sharing 21 inpatient beds. For the service of Medicine there is a total of 16 physicians admitting patients to 63 inpatient beds. During the study period 505 patients were admitted from the waiting list with a median wait of 3 days. 38 patients had not been admitted at the end of the study.

Cardiology

This service has two full time cardiologists and one who is part time. These physicians share 14 beds on the service plus 6 beds in the coronary unit. 83 percent of the admissions were classified as emergency. Many of the patients placed on the waiting list are patients waiting for the diagnostic procedure, cardiac catheterization. 170 patients were admitted from the waiting list; the median wait was 13 days. 12 patients were still not admitted at the end of the study period.

Neurology

The hospital has the only organized neurological service in the province. There are five physicians on staff, two of whom are working full time in neurology. The neurology unit has 22 beds. Emergency admissions account for 53 percent of the total admissions to the service. The median wait time for patients admitted was 20 days. Compared to the wait for admission for medicine, the wait for this service was long.

Only 13 patients were left at the end of the study period. The total number admitted from the waiting list was 127, or 4.7 percent of the total waiting list for all services.

Department of Radiation Oncology

This department provides the only service of its kind in the province. The major activity involves the treatment of cancer and the follow up of patients after treatment. Radiation oncology is primarily an outpatient service. The department is staffed with three radiotherapists who are assigned 14 inpatient beds. Of the patients admitted, 62 percent were categorized as emergency and 32.8 percent as elective. The median wait for admission was 5 days. Only one patient remained on the waiting list at the end of the study period.

Department of Psychiatry

The department is staffed with four psychiatrists who are assigned 20 beds. 45 percent of admissions are classified as emergency, 50 percent were urgent, only 5 percent are elective. There was never a large waiting list for this service. There were 69 patients admitted from the list, 8 patients remained at the end of the study period.

Department of Surgery

The department of surgery is organized into 6 divisions, each with a chief who is responsible to the chairman of the discipline of surgery. The six divisions in the department of surgery are:

- 1) General surgery
- 2) Ophthalmology
- 3) Neurosurgery
- 4) Orthopaedics
- 5) Urology
- 6) Cardiovascular Surgery

General Surgery

The division of general surgery provides secondary and tertiary care to patients referred from all areas of the province. The subspecialties include: gastrointestinal surgery, thoracic surgery, peripheral vascular surgery, endocrine surgery, head and neck surgery, surgical oncology, colorectal surgery, plastic surgery, and trauma.

The bed assignment to general surgery is 45 beds including two burn treatment beds. There are seven surgeons on staff. 56 percent of the admissions were classified as emergency. 427 patients were admitted from the waiting list with a median wait of 7 days. 53 patients were not admitted at the end of the study period.

Ophthalmology

This division has 7 beds assigned with three

ophthalmologists on staff. The service is assigned 7 beds. Ophthalmology is basically an elective service with emergency admissions only 14 percent of the total. The majority of patients were waiting for cataract extractions with lens implants. It is planned that the majority of these patients will be treated as outpatients in day surgery when three additional ophthalmologists arrive in the new year. A total of 191 patients were admitted with a median wait of 28 days. 72 patients remained on the waiting list at the end of the study period.

Neurosurgery

The division of neurosurgery provides the only neurosurgical service in the province. All major trauma that involves head and spinal injuries are referred to this service. There are 2 surgeons with an allocation of 26 beds. 65 percent of admission to this service are classified as emergency. 210 patients were admitted from the waiting list with a median wait of 11 days. 81 patients were waiting admission at the end of the study period.

Orthopaedics

There were six orthopaedic surgeons utilizing 36 beds providing secondary and tertiary care for the province. Emergency admissions to this service are 51 percent of the total. Orthopaedics has always had more patients on the waiting list than other services. 350 patients were admitted with a median wait of 20 days. At the end of the study period

there were 231 patients that had not been admitted; this represents 39.2 percent of those not admitted.

Urology

This division is staffed by two urology surgeons sharing 22 beds. A large part of urology surgery is performed in day surgery. Emergency category patients account for 37 percent of the admissions. 274 patients were admitted after a median wait of 13 days. At the end of the study period there were 46 patients who had not been admitted.

Cardiovascular Surgery

This division is staffed by 3 physicians, one of whom works mainly at the children's hospital. They share 27 beds with the division of cardiology and use an average of 13 beds. All cardiovascular surgery for the province is done in this unit. 51 percent of the admissions are emergencies. There are also transfers from the cardiology service. 238 patients were admitted with a median wait of 6 days. 27 patients were not admitted at the end of the study period.

CHAPTER V

DESCRIPTIVE AND STATISTICAL ANALYSIS

This chapter gives a descriptive and statistical analysis of the services that maintain a waiting list and admit to inpatient beds. The variables used for the analysis are sex, age group, admission category, health care district (region), and grouped wait.

Tables were prepared for each service for patients that were admitted to hospital from the waiting list. The tables showed frequencies and percentages for the variables sex, age group, admission category, health care district (region), grouped waiting time and ICD diagnostic grouping. Tables were also prepared to show the median waiting time for each service for the same variables.

Finally tables were prepared showing the group on the waiting list that had not been admitted during the study period. There were 589 cases; 52.5 percent (302) had waited longer than three months for admission. At that time we had no way of determining how much longer these patients waited before they were finally admitted to hospital. It would make an interesting sequel to this study, to follow these not admitted patients to determine their waiting time for admission.

Table I
Hospital Waiting List

4117
Total Cases

3501
Admitted

616
Not Admitted

615
No Booking
Date Documented

27
No Booking
Date Documented

642
Not Documented
for Booking Date
and Eliminated

2886
Admitted
And Analyzed

589
Not Admitted
And Analyzed

3475
Cases Studied

Table II
Hospital Waiting Time - Admitted N, Median, Mean

	N	Median	Mean
Medicine	505	3	10
Cardiology	170	13	18
Neurology	127	20	39
Radiation Oncology	116	5	8
Psychiatry	69	3	7
Surgery	427	7	18
Ophthalmology	191	28	50
Neurosurgery	210	11	36
Orthopaedics	350	20	37
Urology	274	13	34
Cardiovascular Surgery	238	6	25
TOTAL	2677	9	-

Table III
I.C.D. Diagnostic Grouping for Those Admitted
N, Median, Mean for Waiting Time

I.C.D. Diagnosis	N	Median	Mean
Infectious/parasitic	5	2	43
Neoplasms	442	4	12
Endocrine/metabolic	148	7	21
Blood	32	2	14
Mental disorders	79	3	9
Nervous system	260	26	46
Circulatory system	470	8	23
Respiratory system	22	2	6
Digestive system	229	8	19
Genitourinary system	234	10	34
Pregnancy complications	3	2	2
Skin diseases	37	5	16
Musculoskeletal system	430	19	40
Congenital anomalies	45	18	43
Ill-defined conditions	98	5	14
Injury/poisoning	109	5	18

Table IV
Waiting List - Admitted by sex (N), % of each services

	Males		Females	
	(N)	%	(N)	%
Medicine	(254)	50.3	(251)	49.7
Cardiology	(118)	69.4	(52)	30.6
Neurology	(61)	48.0	(66)	52.0
Radiation Oncology	(47)	41.0	(69)	59.0
Psychiatry	(26)	30.0	(43)	62.0
Surgery	(213)	49.9	(214)	50.1
Ophthalmology	(84)	44.0	(107)	56.0
Neurosurgery	(144)	68.6	(66)	31.4
Orthopaedics	(215)	61.4	(135)	38.6
Urology	(217)	79.2	(57)	20.8
Cardiovascular Surgery	(177)	74.4	(61)	25.6
TOTAL	(1556)	58.1	(1121)	41.9
Missing	30	-	76	-

Table V

Waiting List - Admitted by 'Sex' (N), % of Total List

	Male		Female		Total	
	(N)	%	(N)	%	(N)	%
Medicine	(254)	16.3	(251)	22.4	(505)	18.9
Cardiology	(118)	7.6	(52)	4.6	(170)	6.4
Neurology	(61)	3.9	(66)	6.0	(127)	4.7
Radiation Oncology	(47)	3.0	(69)	6.2	(116)	4.3
Psychiatry	(26)	1.7	(43)	3.8	(69)	2.6
Surgery	(213)	13.7	(214)	19.0	(427)	16.0
Ophthalmology	(84)	5.4	(107)	9.5	(191)	7.1
Neurosurgery	(144)	9.3	(66)	6.0	(210)	7.8
Orthopaedics	(215)	13.8	(135)	12.0	(350)	13.0
Urology	(217)	13.9	(57)	5.1	(274)	10.2
Cardiovascular Surgery	(177)	11.4	(61)	5.4	(238)	9.0
TOTAL	(1556)	100	(1121)	100	(2677)	100
Missing	30	-	76	-	106	-

Table VI
Waiting Time - Admitted by Sex Median, Mean, STD

	Male			Female		
	Median	Mean	STD	Median	Mean	STD
Medicine	3	8	18	3	11	19
Cardiology	15	20	21	13	16	15
Neurology	21	34	42	27	50	56
Radiation Oncology	5	9	12	5	8	9
Psychiatry	3	5	7	3	9	13
Surgery	7	22	41	8	19	28
Ophthalmology	25	45	51	32	53	52
Neurosurgery	15	46	65	6	24	48
Orthopaedics	20	37	45	21	41	48
Urology	13	35	49	8	33	52
Cardiovascular Surgery	6	21	32	7	34	50
TOTAL	9	-	-	8	-	-

Table VII

Waiting List - Admitted by Age Groups, % of each services

Service	<16 years	16-30	31-45	46-65	66+
Medicine	35.7	25.3	22.6	30.5	21.6
Cardiology	-	6.0	26.0	54.0	14.0
Neurology	-	14.7	30.2	43.5	11.6
Radiation Oncology	-	2.0	18.0	38.7	41.3
Psychiatry	-	18.8	36.2	31.9	13.1
Surgery	-	21.1	22.3	36.4	20.2
Ophthalmology	28.5	11.7	11.7	29.8	46.8
Neurosurgery	7.2	17.1	46.9	30.8	5.2
Orthopaedics	21.4	37.6	29.5	26.6	6.3
Urology	7.2	14.7	18.3	35.8	31.2
Cardiovascular Surgery	-	5.8	26.0	54.3	13.9
TOTAL	100	100	100	100	100
% of each age group	.4	18.0	24.4	37.1	20.1

Table VIII
Waiting Time - Admitted by Age Groups, Median

Service	<16 years	16-30	31-45	46-65	66+
Medicine	23.5	3	4	3	2
Cardiology	-	18	12	15	7
Neurology	-	23	19	23	6
Radiation Oncology	-	10	5	4	5
Psychiatry	-	4	1	3	6
Surgery	-	10	11	8	5
Ophthalmology	34.0	23	19	27	35
Neurosurgery	53.0	13	14	14	4
Orthopaedics	4.0	20	27	20	10
Urology	14.0	7	14	13	12
Cardiovascular Surgery	-	26	7	6	5
TOTAL	9.1	10	10	8	7

Table IX

Waiting List - Admitted by Category, (N), % of each service

	Emergency		Urgent		Elective	
	(N)	%	(N)	%	(N)	%
Medicine	(82)	15.9	(224)	43.3	(11)	40.8
Cardiology	(12)	6.8	(33)	18.8	(131)	74.4
Neurology	(12)	9.2	(63)	48.0	(56)	42.8
Radiation Oncology	(16)	13.4	(64)	53.8	(39)	32.8
Psychiatry	(14)	19.2	(49)	67.2	(10)	13.6
Surgery	(30)	6.6	(157)	34.6	(267)	58.8
Ophthalmology	(4)	2.1	(18)	9.6	(166)	88.3
Neurosurgery	(14)	6.1	(84)	36.8	(130)	57.1
Orthopaedics	(20)	5.6	(91)	25.6	(245)	68.8
Urology	(10)	3.6	(83)	29.6	(187)	66.8
Cardiovascular Surgery	(10)	4.3	(46)	19.5	(182)	77.2
TOTAL	(224)	8.7	(912)	35.6	(1424)	55.7

Table X

Waiting List - Admitted by Category, (N), % of Total List

	Emergency		Urgent		Elective	
	(N)	%	(N)	%	(N)	%
Medicine	(82)	36.6	(224)	24.6	(11)	0.7
Cardiology	(12)	5.4	(33)	3.6	(131)	9.2
Neurology	(12)	5.4	(63)	6.9	(56)	3.9
Radiation Oncology	(16)	7.0	(64)	7.0	(39)	2.7
Psychiatry	(14)	6.3	(49)	5.4	(10)	0.7
Surgery	(30)	13.3	(157)	17.2	(267)	18.8
Ophthalmology	(4)	1.8	(18)	2.0	(166)	11.7
Neurosurgery	(14)	6.3	(84)	9.3	(130)	9.1
Orthopaedics	(20)	8.9	(91)	10.0	(245)	17.2
Urology	(10)	4.5	(83)	9.1	(187)	13.1
Cardiovascular Surgery	(10)	4.5	(46)	5.0	(182)	12.8
TOTAL	(224)	100	(912)	100	(1424)	100

Table XI

Waiting Time - Admitted by Category, Median, Mean, STD

Service	Emergency			Urgent			Elective		
	Median	Mean	STD	Median	Mean	STD	Median	Mean	STD
Medicine	-	-	-	2	6	12	8	18	23
Cardiology	-	-	-	2	5	7	19	23	20
Neurology	-	-	-	14	28	37	47	64	56
Radiation Oncology	-	-	-	4	8	11	12	13	9
Psychiatry	-	-	-	3	8	12	8	11	9
Surgery	-	-	-	3	10	23	13	28	39
Ophthalmology	-	-	-	11	29	36	30	52	52
Neurosurgery	-	-	-	5	29	57	17	45	62
Orthopaedics	-	-	-	5	18	33	28	48	47
Urology	-	-	-	5	19	38	16	41	51
Cardiovascular Surgery	-	-	-	2	5	8	11	30	41
TOTAL	-	-	-	4	-	-	17	-	-

Table XII

Waiting List - Admitted by Health Care District
(N), % of each service

Service	Eastern		Central		Western		Northern	
	(N)	%	(N)	%	(N)	%	(N)	%
Medicine	(350)	69.0	(107)	21.0	(24)	5.0	(26)	5.0
Cardiology	(98)	56.0	(27)	15.4	(30)	17.2	(20)	11.4
Neurology	(81)	64.2	(17)	14.0	(21)	17.0	(7)	5.0
Radiation Oncology	(70)	60.3	(28)	24.1	(14)	12.1	(4)	3.5
Psychiatry	(65)	91.5	(5)	7.1	(1)	1.4	-	-
Surgery	(272)	62.9	(112)	25.9	(24)	5.6	(24)	5.6
Ophthalmology	(143)	74.9	(37)	19.4	(8)	4.2	(3)	1.5
Neurosurgery	(131)	60.9	(63)	29.3	(13)	6.1	(8)	3.7
Orthopaedics	(223)	62.3	(77)	21.5	(31)	8.6	(27)	7.6
Urology	(193)	69.2	(64)	22.9	(6)	2.2	(16)	5.7
Cardiovascular Surgery	(170)	82.2	(17)	8.2	(10)	4.8	(10)	4.8
TOTAL	(1796)	67.1	(554)	20.7	(182)	6.8	(145)	5.4

Table XIII

**Waiting List - Admitted by Health Care District
(N), % of Total List**

Service	Eastern		Central		Western		Northern	
	(N)	%	(N)	%	(N)	%	(N)	%
Medicine	(350)	19.5	(107)	19.3	(24)	13.2	(26)	17.9
Cardiology	(98)	5.6	(27)	4.9	(30)	16.5	(20)	13.8
Neurology	(81)	4.5	(17)	3.1	(21)	11.5	(7)	4.8
Radiation Oncology	(70)	3.9	(28)	5.1	(14)	7.7	(4)	2.8
Psychiatry	(65)	3.6	(5)	0.9	(1)	0.5	-	-
Surgery	(272)	15.1	(112)	20.2	(24)	13.2	(24)	16.6
Ophthalmology	(143)	8.0	(37)	6.7	(8)	4.4	(3)	2.1
Neurosurgery	(131)	7.2	(63)	11.3	(13)	7.1	(8)	5.5
Orthopaedics	(223)	12.4	(77)	13.9	(31)	17.1	(27)	18.6
Urology	(193)	10.8	(64)	11.6	(6)	3.3	(16)	11.0
Cardiovascular Surgery	(170)	9.5	(17)	3.0	(10)	5.5	(10)	6.9
TOTAL	(1796)	100	(554)	100	(182)	100	(145)	100

Table XIV
Waiting Time - Admitted by Health Care District -
Median Wait

Service	Eastern	Central	Western	Northern
Medicine	3	3	2	3
Cardiology	12	23	19	3
Neurology	23	30	12	24
Radiation Oncology	6	5	2	4
Psychiatry	3	2	3	-
Surgery	7	11	6	16
Ophthalmology	31	20	20	12
Neurosurgery	14	11	4	6
Orthopaedics	22	18	19	11
Urology	15	6	8	8
Cardiovascular Surgery	5	11	30	5
TOTAL	9	10	13	6

Table XV
Waiting List - Admitted Grouped Waiting Time -
Cummulative %

Service	0-1 days	2-6 days	7-14 days	15-30 days	1-3 months	>3 months
Medicine	40	70	80	90	99	100
Cardiology	16	33	53	81	99	100
Neurology	17	34	43	58	82	100
Radiation Oncology	33	60	70	92	100	-
Psychiatry	44	74	84	92	99	-
Surgery	19	48	65	80	96	100
Ophthalmology	05	18	34	51	78	100
Neurosurgery	15	41	56	70	87	100
Orthopaedics	13	30	41	63	88	100
Urology	12.5	37.5	57.5	69.0	88.0	100
Cardiovascular Surgery	14	53	67	75	93	100
TOTAL	-	46.5	61.4	75.8	92.4	100

Discussion

Table I describes the total waiting list for the hospital. 4117 patients were placed on the waiting list for the study period. 642 cases did not have the date of booking documented; 615 had been admitted and 27 were not. Tables for all services were prepared for these not documented cases as well as for the documented cases (Appendix I) using the variables sex, age, admission category, health care district (region). Comparisons made on each of the variables for both groups showed that results were not biased by the exclusion from the study of those 642 cases.

Table II shows the frequency, the median, and mean waiting time for all patients admitted for each service as discussed in the service descriptions in Chapter IV. There were differences in median waiting time when service groups were considered. The services of ophthalmology, neurology, and orthopaedics had the longest wait.

Table III shows the distribution median and mean waiting time for all admitted cases by I.C.D. diagnostic grouping. The longest waiting times were for disorders of the nervous system, 26 days, disorders of the musculoskeletal system, 19 days, and for congenital anomalies, 18 days. These findings are consistent with the services identified in Table II, namely neurology and orthopaedics where patients waited longer for admission.

Table IV shows the distribution for males and females

admitted for each service. 58.1 percent of the patients were male and 41.9 percent were females. Two factors account for the smaller percentage of females. First, it is a function of certain services that more males than females are treated. For example, more males have heart disease. The services of neurosurgery, cardiology, urology and cardiovascular surgery all have a higher percentage of males requiring services. The second factor is that the hospital provides neither obstetrical nor gynaecological services - services specific to females.

Table V shows the service distribution and the percentage of the total that each service admitted. The services with the largest percentages of patients admitted from the waiting list were medicine, ophthalmology and orthopaedics.

Table VI shows the median wait times for admission for patients by sex. Overall there was a difference of one day between males (9 days) and females (8 days). There were greater differences in wait time when the services were considered. Females in the service of ophthalmology waited 32 days for admission compared to 25 days for males. There were more females, 56 percent, on the waiting list for this service. More females were also on the waiting list for the neurology service; they waited 27 days for admission compared to 21 for males. In the urology service 20.8 percent were females compared to 79.2 percent males. Males in this service waited 13 days compared to 8 days for females.

Table VII demonstrates the age groups of patients admitted to the different services. The largest numbers, 37.1 percent of the patients admitted were in age group 45-65 years. 34 percent of all patients on the waiting list were in this age group. Two services that showed differences were orthopaedics and neurosurgery. For orthopaedics the largest percentage admitted were in age group 16-30 years. The study hospital has found that this age group is largely made up of young males - the group most likely to be involved in sports injuries and injuries resulting from accidental trauma.

The service of neurosurgery had the largest group admitted, 46.9 percent, in age group 31-45 years. This age group would be the age group with work-related back problems.

Table VIII demonstrates the median waiting time by age group. Overall there were only slight differences in wait time by age group. Patients aged 16-30 years and 31-45 years waited 10 days. Those in age group 46-65 waited 8 days with the oldest 66+ having the shortest wait, 7 days.

Table IX demonstrates the distribution and percentage for patients admitted from the waiting list according to emergency, urgent or elective classifications. For the hospital 8.7 percent were classified as emergency, 35.6 percent as urgent, 55.7 percent as elective. Individual services differed in percentages classified as urgent and elective. Compared to the hospital as a whole (35.6 percent), individual services showed differences in percentage of urgent

patients (within the service) admitted as follows; psychiatry 67.2 percent, radiation oncology 48 percent, medicine 43.3 percent. However the median wait for these services were equal to or less than that for the hospital (4 days), with the exception of neurology where the median wait was 14 days for urgent patients.

Services with the largest number of elective admissions were ophthalmology 88.3 percent, with a median wait of 30 days, (Table XI) cardiovascular surgery 77.2 percent, with a median wait of 11 days, and cardiology had 74.4 percent in the elective category with a median wait of 19 days.

Table X shows the admission categories for each service as a percentage of the total hospital. Of the total patients admitted in the urgent category, medicine had the largest percentage 24.6 percent, general surgery was next with 17.2 percent.

Table XI demonstrates the median, mean and standard deviation for waiting times for each admission category. Overall the median waiting time for patients classified as urgent was 4-5 days; for those classified as elective it was 17 days. There were differences in wait time by service with patients classified as urgent in the service of neurology waiting longest, a median of 14 days. Ophthalmology patients waited a median of 11 days. These two services also had the longest median wait for electives.

Table XII demonstrates the distribution and percentage

of patients admitted to each service from each of the health care districts. Overall 67.1 percent of those admitted were from the Eastern Region, 20.7 percent were from the Central Region, 6.8 percent were from the Western Region and 5.4 percent from the Northern Region. As expected, the largest number admitted was from the Eastern Region which had the largest number of patients on the waiting list, 66 percent were from this region. The other three regions would utilize the hospital mostly for tertiary services. One must also understand that a large percentage of patients admitted to the hospital from the other three regions were admitted as emergencies and were not placed on the waiting list.

Table XIII shows the admissions by service from the different health care regions as a percentage of the total admissions. Again the largest percentage of the total is for the Eastern Region.

Table XIV demonstrates the median waiting time in days by service from all Health Care Regions. Overall the median wait was 9 days from Eastern, 10 days from Central, 13 days from Western, and 6 days from the Northern Region. The longest wait was for patients from the Western region, this could be caused by transportation problems given the distance. The waiting time for the services neurology, orthopaedics, and ophthalmology were long in all regions.

Table XV gives cumulative percentages for waiting time for admissions to all services. It has been demonstrated that

35.6 percent of the patients were classified as urgent and were admitted with a median waiting period of 4 days. In this table we find that 46.5 percent of the patients admitted waited 2 to 6 days. 75.8 percent waited 15-30 days, 92.4 percent were admitted with a waiting period of up to three months.

Group Not Admitted

During the study period, 4117 patients were placed on the waiting list by their physician. 3501 or 85 percent were admitted to hospital, 15 percent or 616 were not admitted. As explained earlier, 642 cases were eliminated from the study. These cases did not have booking date documented, so that the length of wait for admission could not be determined. In the 642 cases dropped, 615 had been admitted, 27 had not been admitted.

An analysis follows for the group 589 patients that were still on the waiting list, at the end of the study period.

Table XVI
Waiting List - Not Admitted by Sex (N) %

Service	Male		Female		Total	
	(N)	%	(N)	%	(N)	%
Medicine	(14)	4.4	(24)	9.1	(38)	6.6
Cardiology	(10)	3.1	(2)	0.8	(12)	2.0
Neurology	(7)	2.2	(5)	1.9	(12)	2.2
Radiation Oncology	-	-	(1)	0.4	(1)	0.1
Psychiatry	(4)	1.3	(4)	1.5	(8)	1.4
Surgery	(22)	7.0	(31)	11.8	(53)	9.1
Ophthalmology	(30)	9.4	(42)	16.0	(72)	12.4
Neurosurgery	(57)	18.0	(24)	9.1	(81)	14.1
Orthopaedics	(119)	37.3	(112)	42.6	(231)	39.4
Urology	(36)	11.3	(10)	3.8	(46)	7.9
Cardiovascular Surgery	(19)	6.0	(8)	3.0	(27)	4.7
TOTAL	(318)	100	(263)	100	(581)	100
% of Total	(54.7)		(45.3)		(100)	

Table XVII
Waiting List - Not Admitted by Age Group %

Service	>16 years %	16-30 %	31-45 %	46-65 %	66+ %
Medicine	-	5.6	4.3	4.2	16.3
Cardiology	-	-	1.9	3.6	3.5
Neurology	-	0.7	1.9	2.4	3.5
Radiation Oncology	-	-	-	-	1.2
Psychiatry	-	2.8	1.9	0.6	-
Surgery	-	14.6	10.4	6.1	2.3
Ophthalmology	-	5.6	6.1	13.3	35.0
Neurosurgery	-	5.6	20.2	20.0	3.5
Orthopaedics	-	60.3	40.4	30.3	20.9
Urology	-	4.8	8.0	11.5	8.0
Cardiovascular Surgery	-	-	4.9	7.9	5.8
TOTAL		100	100	100	100
% of Age Groups		25.8	29.3	29.5	15.4

Table XVIII

Waiting List - Not Admitted by Admission Category (N) %

Service	Emergency (N) %	Urgent (N) %	Elective (N) %	Total (N) %
Medicine	-	(13) 12.8	(25) 5.2	(38) 6.5
Cardiology	-	-	(12) 2.5	(12) 2.1
Neurology	-	(6) 5.9	(7) 1.5	(13) 2.2
Radiation Oncology	-	-	(1) 0.2	(1) 0.2
Psychiatry	-	(5) 5.0	(3) 0.6	(8) 1.4
Surgery	-	(8) 7.9	(45) 9.4	(53) 9.1
Ophthalmology	-	(2) 2.0	(70) 14.6	(72) 12.4
Neurosurgery	-	(34) 33.7	(47) 9.8	(81) 14.0
Orthopaedics	-	(27) 26.7	(202) 42.2	(229) 39.5
Urology	-	(4) 4.0	(42) 8.8	(46) 7.9
Cardiovascular Surgery	-	(2) 2.0	(25) 5.2	(27) 4.7
TOTAL	-	(101) 100	(479) 100	(580) 100
% Urgent & Elective		(17%)	(83%)	

Table XIX
Waiting List - Not Admitted by Health Care District %

Service	Eastern %	Central %	Western %	Northern %
Medicine	8.3	1.7	4.9	3.8
Cardiology	-	2.4	9.7	15.4
Neurology	2.5	0.6	4.9	3.8
Radiation Oncology	-	-	-	-
Psychiatry	2.2	0.6	-	-
Surgery	-	21.8	26.8	11.5
Ophthalmology	13.5	9.4	21.9	3.8
Neurosurgery	15.4	12.9	7.4	19.2
Orthopaedics	41.1	41.2	24.4	30.9
Urology	10.7	5.9	-	7.8
Cardiovascular Surgery	6.3	3.5	-	3.8
TOTAL	100	100	100	100
% of Total	57.2	30.7	7.4	4.7

Table XX
Waiting List - Not Admitted by I.C.D. Diagnosis
Grouping, N, %

I.C.D. Diagnosis	N	%
Infectious/parasitic	2	0.4
Neoplasms	18	3.3
Endocrine/metabolic	20	3.7
Blood	1	0.2
Mental disorders	8	1.5
Nervous system	95	17.3
Circulatory system	38	7.0
Respiratory system	4	0.7
Digestive system	22	4.0
Genitourinary system	46	8.4
Pregnancy complications	1	0.2
Skin diseases	7	1.3
Musculoskeletal system	236	43.2
Congenital anomalies	9	1.7
Ill-defined conditions	13	2.4
Injury/poisoning	26	4.7
TOTAL	546	100
Missing	43	-

Not Admitted Group

Conclusions could not be inferred from the study of this group of patients, since it was not known when or if they were hospitalized. However a distribution comparison with those patients that were admitted using the same variables was completed.

Table XVI. The distribution (not admitted) of males 54.7 percent and females 45.3 percent was almost identical to the percentage of males 56.6 percent and females 43.4 percent that were admitted. This showed no discrimination by sex.

Table XVII. It is noted that 17 percent of the patients not admitted were classified as urgent. Of these, 6 percent were in the service of neurosurgery and 4.8 percent were in the service of orthopaedics. If these patients were classified correctly as urgent they should have been admitted with a five day wait. As stated earlier the service of orthopaedics had the largest waiting list and the service of neurosurgery had few beds available for other admissions because of the large numbers of emergency admissions. To determine how long these urgent patients waited to be admitted would require a later study.

Table XVIII. The distribution for patients not admitted and admitted according to age group showed differences. For patients not admitted in age group 16-30 the percentage was 25.8 compared to 18 percent for the admitted group. The not admitted group for age 31-45 was 29.3 percent compared to 24.5

percent for those admitted. In age group 45-65, 29.5 percent were not admitted compared to 37.5 percent in the admitted group. Fifteen point four percent in age group 66+ were not admitted compared to 19.6 percent in the admitted group. The numbers in the not admitted group were much less than in the admitted group.

Table XIX. This table demonstrates the percentages not admitted by district. Fifty seven point two percent of these not admitted were from the Eastern district compared to 67.1 percent for those admitted. Thirty point seven percent from the Central Region were not admitted compared to 20.7 percent in the admitted group. Seven point four percent of those not admitted were from the Western Region compared to 6.8 percent in the admitted group. Four point seven percent were from the Northern Region in the not admitted group compared to 5.4 percent admitted.

CHAPTER VI

PROCESS OF CARE

Patients who are on hospital waiting lists longer than 30 days are usually waiting for elective surgical procedures. This is demonstrated by the fact that 87 percent of patients who were still on the waiting list at the end of the study period were waiting admission to surgical services.

When hospitals are faced with budget cuts or problems in hiring sufficient professional staff, bed allocations are often reduced. In such cases the group of patients with the lowest priority for admission is the group waiting for elective surgery. There is much speculation about what happens to patients in times of tight financial resources when longer waits for treatment occur.

This component uses a chart audit to determine differences, if any, in the process of care during hospitalization for patients based on the length of time waiting for admission.

As described in the methodology section, Chapter III, tables were prepared from data abstracted from the patients' charts based on criteria developed for three diagnostic categories to indicate the process of care during hospitalization (Appendix III). Waiting time was divided into 3 time periods, 0 - 30 days, 31 -90 days and 91+ days.

Table XXII

**Orthopaedics - Process of Care - Diagnosis - Osteoarthritis
and Related Disorders of Pelvic and Thigh Region -
Statistics for each Variable by Wait Time**

Variable	Wait Time								
	0 - 30 days			31 - 90 days			91+ days		
	Median	Mean	STD	Median	Mean	STD	Median	Mean	STD
Age	65.0	66.5	10.2	51.5	52.7	2.8	68.5	68.5	3.5
Days on Wait List	8.5	10.7	7.9	77.0	69.2	20.5	121.5	121.5	16.2
Pre-Op Days	2.5	5.5	4.8	8.0	12.7	10.8	3.0	3.0	2.8
Post-Op Days	11.0	23.6	17.6	21.5	22.5	8.4	18.5	18.5	12.0
Length of Stay	25.0	29.0	17.3	28.5	35.0	17.4	21.5	21.5	14.8
TOTAL	10 cases			4 cases			2 cases		

Table XXIII

Orthopaedics - Process of Care - Diagnosis - Osteoarthritis
and Related Disorders of Pelvic and Thigh Region
Distribution for Variables by Wait Time

Number of Occurrences	0 - 30 days						31 - 90 days						91+ days					
	0	1	2	3	4	5+	0	1	2	3	4	5+	0	1	2	3	4	5+
<u>Variables</u>																		
Consults Pre-Op	3	6	-	1	-	-	-	3	-	1	-	-	1	1	-	-	-	-
Consults Post-Op	7	3	-	-	-	-	2	1	1	-	-	-	2	-	-	-	-	-
Complications	7	1	2	-	-	-	3	1	-	-	-	-	2	-	-	-	-	-
Post-Op Clinic Visits	3	2	2	-	2	2	3	-	-	-	-	1	1	1	-	-	-	-
Days in I.C.U.	10	-	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-
Days in C.C.U.	10	-	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-
Days in S.P.	10	-	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-
Returns to O.R.	9	1	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-
Readmissions	9	-	1	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-
TOTAL	10 cases						4 cases						2 cases					

Orthopaedic Analysis

(Table XXII). The sample was small with 16 cases, 10 were in wait group 0 - 30 days, 4 were in wait group 31 - 90 days and 2 were in the 90+ group. The median wait time was 8.5 days, 77 days and 121.5 days for the respective groups. The 2 cases in the group with the longest wait, 121.5 days, had the shortest length of stay, 21.5 days. Patients in the group 31-90 days had the longest length of stay, 28.5 days. This group also had a median of 8 days in hospital prior to surgery compared to 2.5 days and 3 days in the other two groups. The number of days in hospital post operation in this group was much longer, 21.5 days, compared to the 11 days for the first group and 18.5 days for the third group. Because of a combination of both these factors, the patients in the wait group 31-90 days had the longest stay in hospital, 28.5 days.

(Table XXIII), demonstrates for each case the number of occurrences by variable. For example, for the group in 0 - 30 wait time, for the variable, 'consults post-op', 7 patients had no consult post-op and 3 patients had 1 consult post-op. The number of occurrences for the first four variables were higher in the group with the shortest wait 0-30 days. This would indicate that this group would be more acute than the group in the other waiting periods and so were admitted within a short waiting period.

It is interesting to note that the group of patient who

waited 31-90 days had the longest stay in hospital, 28.5 days compared to 25.0 days for the patients in group 0-30 days and 21.5 days for patients in group 91+ days.

Table XXIV

**Neurosurgery - Process of Care, Diagnosis - Disk Disorders,
Statistics for variables by wait time**

Variable	Wait time in days								
	0 - 30 days			31 - 90 days			91+ days		
	Median	Mean	STD	Median	Mean	STD	Median	Mean	STD
Age	38	39.6	13.7	42	44	10.8	39	41	12
Days on wait list	6	11.0	8.0	50	55	18.0	125	148	59
Pre-op days	2	4.0	7.0	3	5	6.0	1	3	3
Post-op days	7	7.5	2.0	7	9	4.0	7	8	2
Length of stay	9	12.0	7.0	14	14	5.0	12	11	3
Total	29 cases			10 cases			11 cases		

Table XXV

**Neurosurgery - Process of Care, Diagnosis - Disk Disorders,
Frequencies for applicable variables by wait time**

	Wait time in days																	
	0 - 30 days					31 - 90 days					91+ days							
Number of Occurrences	0	1	2	3	4	5+	0	1	2	3	4	5+	0	1	2	3	4	5+
<u>Variables</u>																		
Consults Pre-Op	23	6	-	-	-	-	9	1	-	-	-	-	8	2	1	-	-	-
Consults Post-Op	28	1	-	-	-	-	8	1	-	1	-	-	10	-	1	-	-	-
Complications	25	4	-	-	-	-	10	-	-	-	-	-	11	-	-	-	-	-
Post-Op Clinic Visits	3	5	9	2	2	8	3	1	1	1	1	3	1	4	-	-	1	5
Days in I.C.U.	29	-	-	-	-	-	10	-	-	-	-	-	11	-	-	-	-	-
Days in C.C.U.	29	-	-	-	-	-	10	-	-	-	-	-	11	-	-	-	-	-
Days in S.P.	29	-	-	-	-	-	10	-	-	-	-	-	11	-	-	-	-	-
Returns to O.R.	29	-	-	-	-	-	9	1	-	-	-	-	11	-	-	-	-	-
Readmissions	20	8	1	-	-	-	5	3	2	-	-	-	8	3	-	-	-	-
TOTAL						29 cases						10 cases						11 cases

Neurosurgery Results

(Table XXIV). The sample for this service was 50 cases, 29 were in wait group 0 - 30 days, 10 were in wait group 31 - 90 days and 11 cases were in the 91+ group. The median wait time was 6 days, 50 days and 125 days for the respective groups. The 0 - 30 wait group had the shortest length of stay, 9 days.

(Table XXV) demonstrates similar patterns in the criteria for the three groups. There is no indication of increased acuteness on any of the criteria for either group.

The major difference is identified in Table XXIV. For this diagnosis the group of patients in the 31-90 days waiting had the longest stay in hospital. This group stayed 14 days compared to 9 days for the 0-30 day group and 12 days for the 90+ group.

Table XXVI
Cardiovascular surgery - Process of Care,
Diagnosis Coronary Artery Bypass -
Statistics for each variable by wait time

Variable	Wait time in days								
	0 - 30 days			31 - 90 days			91+ days		
	Median	Mean	STD	Median	Mean	STD	Median	Mean	STD
Age	50	57	9	57	56	4	49	48	10
Days on Wait List	3	5	8	67	67	15	120	145	51
Pre-Op Days	2	4	4	4	4	3	2	4	3
Post-Op Days	9	10	5	11	12	4	9	9	1
Length of stay	11	14	7	15	16	5	11	12	4
TOTAL	27 cases			8 cases			8 cases		

Table XXVII

Cardiovascular surgery - Process of Care for Diagnosis,
Coronary Artery Bypass, Frequencies for each
variable by wait time

	Wait time in days																	
	0 - 30 days					31 - 90 days					91+ days							
Number of Occurrences	0	1	2	3	4	5+	0	1	2	3	4	5+	0	1	2	3	4	5+
<u>Variables</u>																		
Consults Pre-Op	23	4	-	-	-	-	7	-	-	-	-	1	7	1	-	-	-	-
Consults Post-Op	24	2	-	-	-	1	7	1	-	-	-	-	8	-	-	-	-	-
Complications	20	6	-	-	-	1	4	2	-	1	-	1	8	-	-	-	-	-
Post-Op Clinic Visits	1	8	10	2	4	2	1	1	3	-	1	2	-	5	2	1	-	-
Days in I.C.U.	-	-	10	15	1	1	-	-	2	5	1	-	-	-	5	3	-	-
Days in C.C.U.	26	-	1	-	-	-	6	-	-	2	-	-	8	-	-	-	-	-
Days in S.P.	27	-	-	-	-	-	8	-	-	-	-	-	8	-	-	-	-	-
Returns to O.R.	26	1	-	-	-	-	8	-	-	-	-	-	8	-	-	-	-	-
Readmissions	22	5	-	-	-	-	7	-	1	-	-	-	7	1	-	-	-	-
TOTAL	27 cases						8 cases						8 cases					

Cardiovascular Results

(Table XXVI). The sample for this service was 43 cases, 29 were in wait group 0 - 30 days, 8 were in wait group 31 - 90 days and 8 in group 91+ days. The median wait time was 3 days, 67 days and 120 days respectively. The length of stay in hospital was longest for the group that had waited 31 - 90 days. Post-op days was also longest for this group.

(Table XXVII) Demonstrates similar patterns for each of the criteria for each of the waiting periods.

The only difference for the three groups of patients in each of the waiting periods is in the length of time the patient stayed in hospital. The group in 31-90 day waiting period stayed a median of 15 days compared to 11 days for 0-30 day group and 11 days for the 91+ group.

CHAPTER VII

CONCLUSION

The study of hospital waiting lists and waiting times for admission must be viewed within the context of factors that influence both the size of the list and the waiting times. Sanderson, H. (1982) in his discussion of admission thresholds says the real problem is that there is no useful information on the threshold of admission in different places. We are trying to judge admission thresholds by the variables, waiting list size and waiting time without knowing much about the variables that influence them. Each hospital will be affected to different degrees by the various factors. Therefore for any one diagnosis or service, it is difficult to develop an acceptable waiting time that can be applied to all hospitals.

Some of these factors are:

- 1) The number of beds allocated to a particular service
- 2) The number of physicians with admitting privileges to the service.
- 3) The operating room time assigned to a physician.
- 4) The referral base for a service. For example, the neurosurgical service is the only one in the province, to which patients are sent from all areas for admission. The majority of the patients referred to this service are emergency patients who

do not wait and who make up 65 percent of all admissions to this service. Very few beds are available for elective admissions. This increases the size of the waiting list and increases the waiting time.

- 5) Patients request referrals to physicians known for their expertise in a particular specialty. This increases the physician's and the service waiting list.
- 6) An increase in specialists in the regional hospitals tends to increase the number of patients referred for tertiary care.
- 7) Services that provide programs that are unique and only offered in one facility will have longer waiting lists causing patients to wait longer for admission.

In this study patients categorized as urgent were admitted after a median wait of 2 - 4 days except in ophthalmology where the median wait was 11 days and in neurology with a median wait of 14 days. The median wait time for elective patients was 17 days but again there were differences in some services. For elective admissions the services with a wait period longer than the median were neurology with a median wait of 47 days, ophthalmology with a median wait of 39 days and orthopaedics with a median wait of 28 days.

Because the service of neurology provides the only program for the province, and 53% of the admissions are emergencies, the waiting period for admission was longer than for the other medical services. Yet 88 percent of the patients were admitted within 3 months of going on the list. Patients from the Central Health District made up 13 percent of the admissions for this service and waited the longest period, 30 days, for admission. Females made up 52 percent of the admissions and waited longer than the males.

The service of ophthalmology provides tertiary care for patients referred from other ophthalmologists in the province. 78 percent were admitted with a waiting period of up to 3 months. Patients from the Eastern Region made up 75 percent of those admitted and had waited longest for admission. The plan for this service is to expand the day surgery program. In the future all suitable patients requiring cataract surgery with lens implant will be done in day surgery and will not be admitted to hospital.

In the service of orthopaedics, the distribution of males was 61.4 percent and females 38.6 percent. The largest group admitted, 38 percent were in age group 16 - 30 years, the age group associated with sports injuries and accidental trauma. Elective admissions were 69 percent of the total. Those who had waited longest for admission were from the Eastern Region, 62 percent with a median wait of 22 days. Overall, 88 percent were admitted within 3 months of being placed on the waiting

list. This service had the largest number on the waiting list, a total of 589. 39.7 percent were not admitted during the study period. At the time of this study, orthopaedic surgery was not being performed in any other hospital in the province.

The following table demonstrates the study group percentages by service for those admitted and not admitted.

Table XXI

Waiting List - Admitted and Not Admitted % by Service

<u>Service</u>	<u>Admitted %</u>	<u>Not Admitted %</u>
Medicine	93.5	6.5
Cardiology	93.4	6.6
Neurology	90.7	9.3
Radiation Oncology	99.0	1.0
Psychiatry	95.8	4.2
Surgery	88.9	11.1
Ophthalmology	72.6	17.4
Neurosurgery	72.0	18.0
Orthopaedics	60.3	39.7
Urology	85.6	14.4
Cardiovascular Surgery	96.7	3.3

The largest number of patients not admitted, 87 percent, were in the surgical services. 287 patients, 48 percent, had waited less than 3 months. The remaining 302 who had waited longer than 3 months may have not been admitted for several reasons. Some patients' conditions may have improved sufficiently so that admission for treatment was no longer necessary; others could have been treated outside the province, others may have migrated from the province, and

still others, whose conditions had deteriorated sufficiently could have been admitted as emergency cases. More detailed follow-up of those cases is required to determine when and if these patients were admitted.

Major Findings

The major findings in this study may be summarized as follows, and will include only findings from the analysis of the patients that were admitted from the waiting list.

1. The percentage of males 58.1 and females 41.9 admitted did not differ significantly from the percentage of males 56.6 and females 43.4 on the total waiting list.

The median waiting time for admission was 9 days for males and 8 days for females. This waiting time varied according to specialty service. The shortest median wait was 3 days for patients in medicine and psychiatric services. Those who waited longest were patients in the service of ophthalmology, 28 days; in the service of neurology, 21 days; in orthopaedics, 20 days, .

2. Differences were found in the percentages admitted for the different age groups, 18 percent of those admitted were in age group 16-30 years, 24.4 percent were in age group 31-45 years, 37.1 percent in age group 46-65 years. The largest number of patients on the waiting list were in the latter age group. The remaining 20.5 percent were from the age group 66+. Patients <16 years are not usually admitted to this facility unless a service is required that is not available at the children's hospital. There were only 14 patients in this age group.

The median wait was 10 days for admission for patients in age groups 16-30 years and 31-45 years.

Patients in age group 46-65 waited a median of 8 days, the shortest wait was 7 days for those patients 66+.

3. Patients classified as emergency were 8.7 percent of the study group. All were admitted the same day the request was submitted. It is not usual for doctors to initiate a request for admission for those patients. Those that were submitted were probably requests for admission from the specialty clinics. Thirty five point six percent of those admitted were classified as urgent and were admitted after a median wait of 2 to 5 days. Again there were differences in waiting time. The median wait for neurology was 14 days, and ophthalmology 11 days.

Fifty five point seven percent of those admitted were classified as elective. The median wait overall was 17 days with variances in several services. Services with the longest wait were neurology, ophthalmology, and orthopaedics with 49, 39, 27 days respectively.

4. The distribution of patients admitted from the Health Care Districts was in direct proportion to the numbers of patients on the waiting list from each of the districts. Sixty seven point one percent of the patients admitted were from the Eastern Region, 20.7 percent from the Central Region, 6.8 percent from the Western Region and 5.4 percent from the Northern Region. All the districts have regional hospitals that provide primary and secondary care. Usually patients are referred to

this hospital for tertiary care or for services that are not available elsewhere, e.g. - neurology, neurosurgery, cardiovascular surgery. It is also an accepted fact that most patients referred from those districts are classified as emergency. Therefore, there are relatively small numbers on the waiting list from these regions compared to the Eastern Region.

5. There are a number of observations to be made from the chart audit for the three diagnoses studied in the services of neurosurgery, orthopaedics and cardiovascular surgery following short, medium and long waiting periods for admission. It is shown that the process of care is very much the same for the three diagnoses selected. The only difference found was in the group of patients for each diagnoses who had waited 30-90 days for admission. In the three cases the length of stay in hospital was longer by several days. These findings should not be generalized to other diagnoses. The absolute numbers for other surgical diagnoses were too small to permit comparisons. A similar process of care profile was not carried out for medical diagnosis because there were not a sufficient number of cases in any particular diagnostic group to complete this type of profile.

The study of process of care does not take into account the probable differences in symptomatology and functional status and therefore does not consider the

opinions, needs and feelings of the patients. These are subjective and difficult to measure and would require a survey of patients which was impossible to implement with this retrospective study.

For these reasons the finding that there are no differences in the process of care, except for length of hospital stay, has both external and internal validity problems. Internal validity is limited because we do not have any knowledge of the possible effects of a long waiting period on function or emotional status, or working life for the patient. Extending these findings to other diagnoses is also risky.

It is fair to assume that physicians manipulate the waiting list using their own criteria to evaluate each patient, in terms of subjective and objective severity of the disease. This may be the explanation for the similarities in process of care despite long waiting periods for admission. Severe cases, that are in need of immediate treatment are usually hospitalized early. This is only an assumption that cannot be proven by our data but it is plausible.

CHAPTER VIII

IMPLICATIONS FOR RESEARCH AND PRACTICE

It must be understood that not all patients wait for admission to hospital. Only 38 percent of patients admitted during the study period were placed on the waiting list. 62 percent were admitted with no waiting time.

Much of the literature reviewed for this thesis were official reports from multidisciplinary working groups about perceived problems relating to waiting lists, and articles offering alternatives for waiting list management. Only one study offered service analysis providing waiting times. These waiting times could not be used as comparisons with the results of this study because of large differences in numbers of patients waiting for admission Bloom, B., Frederick, A. (1987) (Figure VI).

People in the health care system know that waiting lists lengthen because of disturbances in a delicate balance of factors. The importance of physical resources (hospital beds, operating time), manpower resources (surgeons, anaesthetists, specialist and nurses) has been recognized for many years. Other factors are equally important including the demographic and age characteristics of the populations served; referral patterns, admission and discharge procedures. Comprehensive comparative studies need to be done for all hospitals, taking into consideration the above factors.

In the present economic climate it is important that doctors and hospital managers agree on acceptable waiting times for the services that are provided by their individual hospital. When this is known any increases in waiting time can be addressed and action taken before crises occur.

It is noted in closing that the methodology developed in this study could be utilized by other provincial hospitals to provide a more comprehensive perspective of waiting times for hospital admission. A three month waiting list for analysis rather than the full year could be sufficient to develop individual service waiting times for most hospitals.

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APPENDIX I

Table XXVIII

Bookdate Documented and Not Documented for 'sex'

Sex	<u>Book date documented</u>		<u>Book date not documented</u>		Total	%
	N	%	N	%		
Male	1,908	86.8	288	13.2	2,196	100
Female	1,463	86.9	219	13.1	1,682	100
TOTAL	3,371	-	507	-	3,878	-
Missing	104	-	135	-	239	-

Table XXIX

Bookdate Documented and Not Documented for 'age group'

Grouped Age	<u>Book date documented</u>		<u>Book date not documented</u>		Total	%
	N	%	N	%		
< 16 years	13	81.2	3	18.8	16	100
16 - 30	652	86.9	98	13.1	750	100
31 - 45	846	88.6	109	11	955	100
45 - 65	1,222	86.2	195	13.8	1,417	100
66+	633	84.7	114	15.3	747	100
TOTAL	3,286	-	603	-	3,805	-
Missing	189	-	123	-	312	-

Table XXX

**Bookdate Documented and Not Documented
for 'Admission Category'**

Category	<u>Book date documented</u>		<u>Book date not documented</u>		Total	%
	N	%	N	%		
Emergency	239	99.5	1	0.5	240	100
Urgent	1,067	84.0	201	16.0	1,268	100
Elective	2,153	84.0	426	16.0	2,579	100
TOTAL	3,456	-	628	-	4,087	-
Missing	16	-	14	-	30	-

Table XXXI

**Bookdate Documented and Not Documented
for 'Health Care District'**

Health Care District	<u>Book date documented</u>		<u>Book date not documented</u>		Total	%
	N	%	N	%		
Eastern	2,249	86	353	14	2,602	100
Central	747	85	131	15	878	100
Western	221	82	38	18	208	100
Northern	170	73	32	27	120	100
TOTAL	3,387	-	554	-	3,808	-
Missing	88	-	88	-	176	-

Table XXXII

Bookdate Documented and Not Documented for 'Service'

Service	Book date documented		Book date not documented		Total	%
	Frequency	%	Frequency	%		
Medicine	555	72	210	28	765	100
Cardiology	188	70	82	30	270	100
Neurology	144	80	37	20	181	100
Radiotherapy	120	85	22	15	142	100
Psychiatry	81	84	15	16	96	100
Surgery	507	86	80	14	587	100
Ophthalmology	264	92	23	08	287	100
Neurosurgery	310	88	40	12	350	100
Orthopaedics	591	92	50	08	641	100
Urology	328	91	34	06	362	100
Cardiovascular Surgery	267	89	31	11	298	100
TOTAL	3,355	-	624	-	-	-
Missing	120	-	18	-	-	-

Discussion

Sex

(Table XXVIII). Figure V shows the percentage distribution by sex for the cases with booking date documented and booking date not documented. 87 percent of the males had book date documented with 13 percent not documented; 87 percent of females had book date documented with 13 percent not documented. Since the percentage is the same for males and females, results should not be affected by excluding the cases with book date not documented.

Age Groups

(Table XXIX). Because each age group of those patients admitted had similar percentages of cases with booking date documented, eliminating those cases with no documentation should not affect the results by age group. The largest percentage not documented were age group <16 but the discrete number was only 3.

Admission Category

(Table XXX). There were no difference in the percentages with book date documented for the categories, urgent or elective; they were each 84 percent. Again, excluding the cases not documented should make no difference in the analysis of this variable.

Health Care District

(Table XXXI). There was no difference for 3 of the regions for the percentage of those with booking date

documented but there was a difference for the Northern Region which had only 73 percent with booking date documented compared to 82 percent to 86 percent for the other districts. The numbers for the Northern Region were small, only 3 percent of the total, so that eliminating the not documented should not create a bias for this variable.

Service

(Table XXXII). This table demonstrates the distribution and percentage of services that had booking date documented and those that did not have the booking date documented on the admission form.

Nine of the services had the booking date documented on more than of 80 percent of the forms. Two services, medicine and cardiology, were different. The booking date was not documented in a large number of cases in these two services, 28 percent in medicine and 30 percent in cardiology. Further analysis was done to determine why these two services were different. For each service a computer printout was run for physicians admitting to the service. In the medicine service there are 17 physicians admitting yet one physician was responsible for 56.2 percent of the cases with no booking date documented. This physician admits strictly elective patients to a self-caring unit, the clinical investigation unit with 7 beds. The requests for admission for this unit originate in the unit and are sent to the Admitting Department on Friday with the understanding that these patients will be admitted

to this unit on the following Monday. Quite often the booking date is not inserted on the slip because it is understood by staff in the department that the patients will be admitted on Monday. For this reason eliminating these cases will not affect the waiting time for other patients who are waiting admission to the medicine service.

The service, cardiology, had 3 admitting physicians. Again, one physician was responsible for the majority, 65 percent, of the admission slips without booking date documented. Again this service has a short stay diagnostic unit for patients requiring cardiac catheterization. The requests for admission to this Unit originate in the cardiac unit and are sent to the Admitting Department on Friday for admission on Monday and Wednesday of the following week. For this reason, excluding these cases with no booking date will not affect the waiting time of the other patients who are waiting admission to the regular cardiology beds.

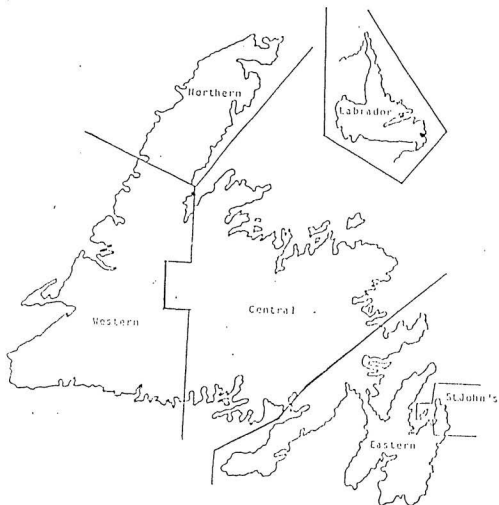
For those reasons, it was decided that excluding the 642 cases would not create bias in the analysis of the documented cases.

APPENDIX II
FIGURES I - VII

Variable Name	-	Variable description and codes.
Observation Number	-	Each patient on the waiting list or admitted in the study period is considered an observation.
M.C.P. Number	-	Unique identifier for each patient, this number is assigned by the Medical Care Commission and is the patient billing number.
Address	-	Community patient came from, recoded to match health care districts - eastern, central, western and northern.
Age	-	Age at last birthday.
Sex	-	Male or female.
Service	-	Hospital service is assigned according to medical staff organization.
Physician	-	Physician who has initiated the request for admission.
Diagnosis	-	The diagnosis reported by attending physician at the time the request for admission is initiated. Later combined to ICD diagnostic groups.
Book date	-	Date patient is placed on the waiting list by her physician.
Admit date	-	Date patient is admitted to hospital.
Wait time	-	Number of days from date patient is placed on the waiting list and date patient was admitted to hospital.
Category	-	Category of admission - emergency - urgent - elective

Figure II

List of variables



Health Care Districts

Figure III
Map depicting health care districts
Northern Region includes Labrador

1. DEPARTMENT OF MEDICINE
 - 1.1 Clinical Teaching Unit I
 - 1.2 Clinical Teaching Unit II
 - 1.3 Clinical Teaching Unit III
 - 1.4 Cardiology
 - 1.5 Neurology
2. DEPARTMENT OF RADIATION ONCOLOGY
3. DEPARTMENT OF PSYCHIATRY
4. DEPARTMENT OF SURGERY
 - 4.1 General Surgery
 - 4.2 Ophthalmology
 - 4.3 Neurosurgery
 - 4.4 Orthopaedics
 - 4.5 Urology
 - 4.6 Cardiovascular Surgery

Figure IV
Hospital Medical Organization

<u>Hospital</u>	<u># Beds</u>	<u>Total Patients Waiting</u>	<u>Wait Time</u>	
			<u>Electives</u>	<u>Urgents</u>
A	1,800	1,800	3 months	2-3 weeks
B	726	8	4-5 days	not known
C	705	900	30-40 days	not known
D	530	682	4 weeks	not known
E	412	632	3 months	not known
F	1,303	1,503	68 days	not known
G	421	300 urgents 700 electives	1-365 days	7-30 days
H	730	741 (Surg. - 687) (Med. - 54)	not known	not known
I	1,381	1,225	1 year	med.-6 months
J	523	1,866	not known	not known
K	974	1,200	not known	not known
L	483	975	not known	not known
M	844	1,303	not known	not known
N	871	2,237 (Surg.-1,535) (Med. - 37) (Rehab.- 5) (Ped. - 151)	not known	not known
O	998	1,200	not known	not known

Figure V

Waiting lists - Canadian Teaching Hospitals
Identified by number of beds to maintain anonymity

<u>Service</u>	<u>Median Wait Time</u>	<u>Median Wait Time</u>
	<u>England</u>	<u>Study hospital</u>
General Medicine	16	3
Cardiology	27	13
Dermatology	15	N/A
Neurology	17	21
Pulmonary	16	N/A
Rheumatology	20	N/A
General Surgery	26	7
Gynaecology	36	N/A
Neurologic Surgery	24	13
Ophthalmology	53	11
Orthopaedic Surgery	55	20
Ototaryncology	62	N/A
Plastic Surgery	63	N/A
Thoracic Surgery	14	N/A
Urology	28	12
* All specialties	39	9

* - Bloom, Bernard S.; Fredrick, A.M.. Waiting for care, queueing and resource allocation. Medical Care, February 1987, Vol. 25, No. 2, pp. 131-139.

Figure VI

Median waiting times for patients waiting admission to a hospital in England (1984)
 Median wait for study hospital, where applicable

- Infectious/Parasitic	- 001 - 139
- Neoplasms	- 140 - 239
- Endocrine/Metabolic	- 240 - 279
- Blood	- 280 - 289
- Mental Disorders	- 290 - 319
- Nervous System	- 320 - 389
- Circulatory System	- 390 - 459
- Respiratory System	- 460 - 519
- Digestive System	- 520 - 579
- Genitourinary System	- 580 - 629
- Pregnancy Complications	- 630 - 679
- Skin Diseases	- 680 - 709
- Musculoskeletal System	- 710 - 739
- Congenital Anomalies	- 740 - 759
- Ill Defined Conditions	- 780 - 799
- Injury/Poisoning	- 800 - 999

Figure VII

I.C.D. Diagnostic Groupings

APPENDIX III
PROCESS OF CARE CRITERIA

PROCESS OF CARE CRITERIA

Variables used to measure a patient's process of care for a period of hospitalization. They are as follows:

Pre-Admission, Outpatient Visits

Number of visits to physician in outpatients department while waiting admission to hospital.

Days on Waiting List

Number of days the patient waits for admission to hospital after doctor initiates a request for admission.

Pre-Op Days

Days patient is in hospital prior to going to surgery. Usually patients are admitted the day prior to surgery booking. More than 1 - 2 days pre-op would usually indicate a problem.

Consults Pre-Op

Consultations to other physicians would indicate a problem and could increase pre-op days.

Post-Op Days

Days in hospital after surgical procedure has been completed.

Post-Op Consults

Consultations to other physicians after surgery.

Post-Op Complications

Problems arising with patient after surgery has been completed, sometimes as a result of the surgery.

Unplanned Return to Operating Room (O.R.)

If patient has to return to O.R. for further surgery as a result of previous surgery.

Days in I.C.U./C.C.U. or S.P.

I.C.U. - indicates Intensive Care Unit, all cardiovascular patients spend a minimum of 48 hours in I.C.U. One would not ordinarily expect patients with disc surgery or orthopaedic surgery to go to this unit.

C.C.U. - Coronary Care Unit.

S.P. - Special Care Unit. This unit is usually on patients own service, e.g. - Special Care Unit on neurosurgical service.

Length of Stay (L.O.S.)

Length of time patient stays in hospital from time of admission to time of discharge.

Post-Op Clinic Visits

Return visits to see physician in outpatient clinic after discharge from hospital.

Unplanned Re-Admission for Same Problem

Indicates patient outcome post-surgery has not been as planned.

