Day Surgery Versus Inpatient Surgery: A Cost Comparison

by

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Finally, as I typed this paper, any errors are mine.

Shelby Harpman

ABSTRACT

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Submitted to the Health Administration Program in April 1982 in partial fulfillment of the requirements for the Degree of Master of Health Administration.

Day surgery is a rapidly growing alternative mode of treating patients. Instead of a two to three day stay in the hospital, the patient arrives the morning of surgery, is operated on and returns home the same evening. There are restrictions on the type of patient and type of procedure that can be done in day surgery. It also has been shown that day surgery is a much less costly method of treating patients, provided the patients and the procedure meet the day surgery requirements.

This study was conducted at the University of Alberta Hospital in Edmonton, Alberta. It looked at six procedures that meet the day surgery requirements (Dilatation and Curettage, Laparoscopy, Non-Recurrent Inguinal Hernia, Breast

Biopsy, Cataracts and Haemorrhoids) and the cost associated with each procedure both on an inpatient and day surgery basis.

A sample of medical records for each procedure was examined and information concerning Nursing, Supply, Drug and Test costs, as well as, length of stay was extracted. Hotel service costs were obtained from various departments and the remaining costs, including Administration and Plant, were obtained from the Hospital's annual return to the government.

The costs were added up to give a procedure cost for each procedure on an inpatient and day surgery basis. Then using data derived from the medical records, including age and complications, an eligibility rate (the percentage of patients eligible for day surgery) was derived. This was multiplied by the total number of that particular procedure performed in 1980 and was then multiplied by the procedure cost. The final result was the savings that would have been possible if a greater percentage of procedures had been done on a day surgery basis.

The results show that significant savings can be expected by substituting day for inpatient surgery, providing a number of inpatient beds are closed to correspond with the increase in day surgery.

Primary Advisor - Dr. D. Letouze

Secondary Advisor - Dr. C. M. Lay

FINAL PROJECT OUTLINE

Chapter 1 Introduction and Objectives

1. General Introduction
   a) information about how the study was begun and background
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2. Routine of a typical day surgery patient
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INTRODUCTION

1.1 GENERAL INTRODUCTION

It is 6:30 a.m. Wednesday morning and Jane Smith has just arrived at the hospital. After a few quick admission procedures, she proceeds up to a room where she changes into a hospital gown and slippers. She is given a sedative and is soon wheeled into the operating room for a tubal ligation.

Monday she had had a blood test and a urinalysis as well as an examination of her circulatory system by an anaesthetist. The results are now available and have been looked at by the surgeon.

A short while later the operation has been completed and Jane is wheeled back to the recovery room. At approximately 5 p.m. Jane, with the help of a friend or relative, dresses and is discharged from the hospital. Within a few days she will be back doing her every day normal activities.

This story is not a science fiction scenario. It is presently happening, in some percentage, in almost every North American hospital and many more around the world. It is called Day Surgery, Ambulatory Surgery or Outpatient Surgery

and it is being hailed, by some, as the panacea to rising hospital costs. It can cut a normal five day stay at a hospital to a 12 hour stay.

In the U.S. where the patient pays for at least part, if not all, of his medical expenses, day surgery has become a viable cost saving alternative to inpatient surgery. Even the U.S. government has recognized day surgery's money saving potential. A regulation that requires 48 common surgical procedures be done on an outpatient basis for Medicare and Medicaid patients in the District of Columbia, has significantly cut admission and health care costs.

The regulation, which covers 195,000 D.C. residents who take part in the two programs, has reduced hospitalization by approximately 55% and saved an estimated $600,000 for Medicare and Medicaid. It has been so successful, that even private insurance companies are considering introducing this policy change.[1]

The most advanced province in Canada, in terms of the type of procedures performed in day surgery, is British Columbia. In 1977, 85% (86 of 101) hospitals participated in a day surgery program. This resulted in almost 28% of the province's surgery being done on a day care basis. Eighty eight percent of Ontario hospitals (197 of 222) had a day

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[1] "Pioneer Outpatient Surgery Project Documents Significant Savings" in Same Day Surgery, April 1981, pg 49.

surgery program yet, only 35% of the province's total procedures were done on a day care basis. In Manitoba, on the other hand, only 46% of its hospitals (37 of 80) had a day surgery program yet, 55% of the province's total surgery was done on a day care basis. Across Canada, this resulted in a 29% day surgery rate.[2]

In terms of cost savings, if the top 30 day surgery procedures (1975 statistics) had all been done on a day surgical basis, the savings in Canada would have amounted to over 11,000 beds and an estimated $271,000,000.[3]

Alberta lagged far behind in 1977, with only 12% of the province's surgery being done on a day care basis. However, that is changing. The University of Alberta Hospital in Edmonton, the largest hospital in Alberta, performed 22% of its surgery on a day care basis in 1980.

It is at the University of Alberta Hospital that this study was begun. This study proposes a model and uses examples of how to go about costing inpatient and day surgery procedures. Ultimately, it shows that the potential savings from substituting day for inpatient surgery are great. These potential savings have to come from a concerted effort

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[2] Shah, C., "Anaesthesia for Day Care Surgery: A Symposium (I). Day Care Surgery in Canada: Evolution, Policy and Experience of The Provinces" in Canadian Anaesthetists Society Journal, July 1980, pg 401.

[3] Ibid, pg 403.

to change the present system by the five major parties involved. They are the provincial government, the hospital administration, the hospital staff, the physicians and the patients. If day surgery is added to the present hospital load, not only would there be no savings, but there would be increased costs.

This study, after proposing a model of what information is needed to come up with a cost per procedure, uses six procedures at the University of Alberta Hospital to come up with potential savings based on 1980 data and cost figures. The six procedures are Dilatation and Curettage, Laparoscopy, Non-Recurrent Inguinal Hernia, Breast Biopsy, Cataracts and Haemorrhoids. These procedures were chosen because of the great potential to increase the number that could be done on a day care basis. Of the combined total of 1,555 of the six above procedures done at the University Hospital in 1980, only 195 or 12.5% were done in day surgery and in the case of Cataracts and Haemorrhoids, none were done in day surgery.

1.2 THE UNIVERSITY OF ALBERTA HOSPITAL

The University of Alberta Hospital buildings were begun in 1912. Originally named the Strathcona Hospital, it contained 150 beds and was a civic hospital. During the First World War the hospital was turned over to the Federal Go-

vernment for use as a military hospital. In 1922, the Strathcona Hospital was turned over to the University of Alberta and the administration was turned over to the University of Alberta Hospital Board. In 1923, the Federal Government erected an 85 bed Old Soldiers' Civil Re-establishment Building which was administered by the University Hospital. This building was later renamed the Wells Pavillion. March 1929 saw the Provincial Government pass the University of Alberta Hospital Act making a corporate body of the University Hospital Board. As well, in 1929, a 122 bed addition was built to the south of the 1912 Wing.

From 1939-45, the University Hospital was essentially a military hospital, although it was not designated as such. In 1943, the Federal Government agreed to build a 250 bed addition to the hospital. Opened in 1945, this addition was called the Colonel Mewburn Pavillion after the University of Alberta's first professor of surgery. The University Hospital now contained 650 beds.

In 1950, an addition for a nurses residence and a south east addition to the University Hospital were provided for. The 1950 Wing increased the number of beds to 925. The 1957 Wing and the 1960 Clinical Services Wing which provided facilities for clinical services, outpatients, operating rooms and admitting facilities, brought the total number of hospi-

tal beds to 1,200.[4]

The Wells Pavillion was closed to patient beds in the late 60's. This pavillion, along with the laundry and kitchen building and the Mewburn Pavillion are among the buildings that will be demolished to make room for Phase 1 Stages 2 and 3 of the new Health Sciences Centre.

1.3 OBJECTIVES

The objectives of this study are:

1. To develop a costing model whereby day and inpatient surgery costs can be compared.
2. To use the model for costing a specific set of procedures.
3. To calculate possible savings for the University Hospital by increasing the percentage of these specific procedures done in day surgery.

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[4] McGugan, A., The First Fifty Years, 1924-1964. University of Alberta Hospital, Chapters 1 & 2.

Chapter II

BACKGROUND

2.1 CONCEPT OF DAY SURGERY

Day surgery may be broadly defined as elective minor or intermediate surgery carried out under local or general anaesthesia on patients who are admitted and discharged the same day.[5] It is an alternative mode of utilizing existing facilities and an alternative to admission to inpatient beds.

The most important variations between inpatient and day surgery come in the areas of medical and anaesthesia policies. These variations distinguish day from inpatient surgery.

MEDICAL POLICIES

The variations in the medical policies occur under the following headings:

1. Type of patient
2. Type of operation

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[5] Burn, J., "A Blueprint For Day Surgery" in Anaesthesia, Vol 34, 1979, pg 791.

3. When to send the patient home
4. What instructions to send home with patient
5. Follow-up.

Each of the areas is covered below.

1. Type of Patient

There are four main areas that should be taken into account when determining whether or not a patient is suitable for day surgery. They are:

A. Anaesthetic Services

a) Any procedure which would subject the patient to more than one and a half hours under general anaesthesia, should not be performed.

b) There are three patient classes established by the American Society of Anaesthesiologists which are eligible for day surgery:

Class 1

All persons with no organic, physiologic, biochemical or psychiatric disturbance. The pathological process for which the operation is performed is localized and not a systemic disturbance.

Class 2

Any patient that may have a mild to moderate systemic disturbance caused by either the condition that necessitates the procedure or any other pathophysiological process (for example, mild diabetes, slight or limited

organic heart disease, controlled epilepsy, cerebral palsy, asthma or cystic fibrosis).

Class 3

Patients with pre-existing systemic diseases can be safely and effectively handled in a day surgery setting provided that their co-existing medical condition is under excellent control.[6]

B. Situations Where Day Surgery Is Inappropriate

a) Condition of Patient

- the patient has a serious systemic disease,
- the patient exhibits a great deal of apprehension which cannot be alleviated,
- the patient has an infection,
- the patient is over 65 years of age.

b) Procedures

- procedures commonly involving a significant blood loss,
- procedures requiring profound muscle relaxation for prolonged periods,
- procedures requiring lengthy post-op care.

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[6] Dawson,B. & Reed,W., "Anaesthesia for Day Care Surgery: A Symposium (III). Anaesthesia for Adult Surgical Outpatients" in Canadian Anaesthetists Society Journal, July 1980, pg 409.

C. Home Environment

The adequacy of the home environment for aftercare should be determined in advance, having regard to the specific surgical procedure. Adequacy is assessed in terms of physical accommodation and availability of personal support at home. Significant deficiencies must be subject to correction by home care arrangements, otherwise the patient should be admitted to inpatient care. The suitability of these home conditions should be assessed by the general practitioner and it is the practioner's responsibility to advise against day surgery if it is necessary to do so.[7]

D. Distance

The distance to be travelled after discharge and the method of transportation available to the patient should be determined when assessing a patient's suitability to undergo a specific procedure on an outpatient basis. Patient discomfort may be increased by a protracted journey and therefore, candidates for day surgery should live within reasonable travel time of the facility.[8] It is therefore, undesirable for a patient to travel more than two hours (or 180 km) to his home when possibly feeling nauseated or faint.

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[7] Working Group On Special Services In Hospitals, Day Surgery Unit Guidelines. Health and Welfare Canada, pgs 2-3.

[8] Ibid, pg 3.

2. Type of Operation

Many types of operations can be classified as possible day surgery operations. In Appendix A are four different lists (and opinions) of what operations can be done in day surgery. The lists are:

a) Present procedures at the University of Alberta Hospitals,

b) Present procedures at the Ottawa Civic Hospital,

c) Possible procedures as outlined by the Working Group on Special Services in Hospitals,

d) Common procedures in Ambulatory Surgery, as suggested by T.R. O'Donovan.[9]

These lists, while being redundant in many cases, are contained to show that different people consider different operations suitable for day surgery. The Ottawa Civic Hospital list was chosen just for comparison purposes.

While the lists presented may or may not be all encompassing, it is generally agreed that the broad categorization of procedures performed should be as follows:

a) Elective and non-elective minor diagnostic and surgical procedures that require the use of less than one and one half hours of general anaesthesia.

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[9] O'Donovan, T.R., "Recent Developments in Ambulatory Surgery" in Outpatient Surgery, 2nd edition. Hill II, G., ed., pgs 2-4.

b) Procedures under local anaesthesia which require an extended period of post-operative observation.

c) Endoscopy procedures under general or local anaesthesia.

d) Cosmetic and plastic surgical procedures which, due to the degree of care and attention needed, require operating room facilities.

e) Oral and dental surgical procedures requiring a general anaesthetic can be performed in the hospital under the supervision of a qualified anaesthetist.

f) In some centers, a range of non-surgical procedures are performed using the facilities of a day surgery unit.

3. When to Send The Patient Home

After the procedure, the anaesthesiologist and circulating nurse should accompany the patient to the recovery room. On arrival at the post-operative room one of them should apprise the nurse of the main features of the patient's intra-operative course. She should be informed of any misadventures e.g. vomitting, that may have occured in the O.R.[10]

Before the patient is sent home to continue his/her recovery, a brief examination should be done to make sure that the patient is in a state of "home readiness."
In preparation for being sent home, the patient must have:

a) stable vital signs for at least one half hour,

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[10] Reed, W., "Recovery From Anaesthesia and Discharges" in Outpatient Surgery. Schultz, R.C., ed., pg 47.

b) no new signs or symptoms post-operatively that may threaten his/her safe recovery,

c) cessation of oozing or bleeding when bleeding was a feature of the operation,

d) no nausea or emesis for one half hour, or evidence that these are waning,

e) good circulation in and return of sensation to the operative extremity when a tourniquet was used,

f) no evidence of swelling or impaired circulation in the extremity when a cast has been applied,

g) voided clear urine following cystoscopy,

h) recognition of time and place,

i) little or no dizziness after changing clothes and sitting for 10 minutes,

j) no pain not subject to control by oral analgesics.[11]

4. What to Send Home With The Patient

Various instructions should be given to the patient before sending him/her home to continue the recovery from day surgery. These include:

a) Dietary instructions. Clear liquids until stomach is settled, then progress to regular feedings. No alcohol should be taken (unless by the physician's orders) for at least 12 hours.

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[11] Ibid, pg 49-50.

b) Medication is provided for the pain,

c) Patient has all the prescriptions ordered by the physician,

d) Surgeon's instructions are reviewed. Limitation of activity, elevation of the operated extremity, when to return to work, anticipated complications, whom to call in the event of unanticipated complications,

e) Anaesthesiologist's instructions are given:

1) "You may feel sleepy or sluggish for several hours."

2) "Don't drive until tomorrow."

3) "Postpone important decisions until tomorrow."

4) "You may have a sore throat for a few hours" (if the patient was intubated).

5) "You may have muscular soreness for a day or two."

f) Return dentures, valuables and clothes,

g) The patient is reassured he has behaved properly,

h) The patient should be informed that dreaming often occurs, and an opportunity should be afforded for the patient to discuss any dream that may be remembered,

i) The patient is informed that a follow-up call is routine and is to be expected.[12]

It is extremely important that the patient not be released under his own care. There should always be someone present to accompany the patient before he/she is released.

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[12] Ibid, pg 50-51.

5. Follow-Up

If possible, a community nurse should call on the following day or within 48 hours at the latest, to check that there are no problems persisting from the anaesthetic and to change the dressings, if necessary. She may advise regarding analgesics for wound or trunk pain, sore throats or residual headaches.

Post-operative complications should be recorded in the routine report on every patient. This should take the form of a simple follow-up chart which would be added to the record present at the hospital.[13]

The patient should also be required to make an appointment with either the doctor or the clinic to follow-up on the recovery from the surgical procedure. In this way it would be assured that any possible complications, that may not be regarded as such by the patient, may be identified and acted upon.

It is essential that a high level of attention be given the patient upon completion of the day surgical procedure so that if any complication should arise requiring the patient be admitted as an inpatient, this can be done quickly, smoothly and efficiently.

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[13] Burn, J., op. cit., pg 800.

ANAESTHESIA POLICIES

Anaesthesia for day surgery has a slightly different focus from that of inpatient surgery. With local anaesthetics the patient should be able to get up and walk out after the operation under his/her own steam. Under general anaesthesia however, light anaesthesia is required so that recovery time needed will be short and allow for early patient discharge.

A detailed description of the more common anaesthetics along with the pharmacology of these anaesthetics can be found in chapters 3 and 4 of Outpatient Anaesthesia edited by K.F. Schmidt (see bibliography).

As well, it has to be realized that there are special requirements for patients undergoing anaesthesia. These include:

1) Suitability of both patient and surgical procedure for outpatient status,
2) Patient/parent acceptance of, and responsibility for, pre- and post-operative instructions,
3) Pre-medication is not usually required,
4) There has to be a rapid recovery from anaesthesia,
5) Patient should be home ready in the custody of a responsible person within 2 hours of the completion of surgery. Patient should be:
    a) Pain free,
    b) Without nausea or vomitting,

c) Without bleeding,

d) Well oriented,

e) Able to retain oral fluids,

f) Able to ambulate unless restricted by the surgical site.[14]

2.2 DAY SURGERY ROUTINE

Bookings

Bookings for day surgery commonly work as follows[15]

1) The day surgery bookings are made by the doctor's offices, by telephone only, to the admitting department.
2) Information usually required for day surgery booking include the surgeon's name, the patient's name, telephone number, address, birthdate, O.R. date, diagnosis and type of anaesthetic to be used.
3) The information can then be entered in a ledger or into the computer so that booking confirmation slips can be distributed to the M.D. and the day surgery booking desk.
4) A label can be used to send a day surgery information letter and pre-admission form to the patient.

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[14] Dawson, B., "Anaesthetic Management" in Outpatient Surgery. Schultz, R.C., ed., pg 29.

[15] Reed,W. & Dawson,B., "The Ambulatory Surgical Facility" in Outpatient Surgery, Schultz, R.C., ed., pgs 17-19.

5) Upon return of the pre-admission form, it can be filed in the patient's file in the admitting office.

6) Outpatient history and surgical consent forms should be sent in as soon as possible.

Five areas are especially important in an efficient day surgery unit. These are:

1) How far in advance to book a day surgery patient-
Day surgery bookings are usually done on a 'first come-first served' basis with respect to the doctor's requirements. The bookings are usually done 2-3 months in advance.

2) Scheduling of procedures on any given day-
Day surgery bookings should be the estimated length of time for the procedure. In this way the day surgery booking clerk would be able to know approximately how many procedures should be scheduled on a given day. As well, the operating room turnover would usually be smooth and predictable, except in the event of an unforeseen complication. Schedule flexibility is also maintained to accommodate the surgeon genuinely delayed by an emergency.

3) Provisions in the case of openings-
Provisions are usually made to insure that if a specialty that has a day O.R. booked does not have any scheduled patients that day, another specialty

is allowed to use the room. For example, if ENT has no surgery scheduled for their particular suite on Tuesday morning, any other specialty can use that suite on a 'first come-first served' basis.

4) Time of last procedure-

Day surgery procedures are usually not scheduled later than 1 or 2 p.m. This allows an adequate amount of time for the patient to recover in the recovery room before being discharged. The reason for this is that it would be preferable that the day bed unit closes at 5 or 6 p.m. so that no nurses will be required at night.

5) Separate day surgery admissions and bookings-

Many hospitals now have separate day surgery booking and reception areas, allowing for better control of booking and admission procedures for the day unit. The Red Deer General and the Vancouver General Hospitals are among these.

The extent to which the five separate areas are implemented in a particular hospital are dependant on how well developed the Day Surgery program is at that particular hospital.

Pre-Admission Procedures

At present, when a person is scheduled for day surgery, the admitting department sends out a pre-admission form that

requires standard information such as name, address and health care number, as well as a day surgery information form. This form informs the patient of everything that is necessary to know about what will be done, before being admitted for day surgery. The form includes the day of the operation, the type of anaesthesia, the time to report to the admitting department, as well as informing the patient that he/she should not eat the evening before surgery. It also informs the patient as to what type of medical information will be required before he/she can be admitted for day surgery.

The form also provides post-operative information. These rules are very important and should be followed closely. They are; a) the patient must understand that he/she may not drive home after general anaesthesia, he/she must make other arrangements to return home, b) the patient must have someone to remain in the home overnight and c) the patient should not stay alone after surgery. By stressing the importance of such concerns prior to surgery, a high level of patient safety will be maintained.[16]

Patients in the hospital area are told to attend a pre-surgical clinic 2 days before the scheduled day surgery. When a patient arrives for a pre-surgical clinic a blood test, a urinalysis and an evaluation of the heart and lungs

[16] Hutchison, M., "Setting Up A Day Surgery Program" in Dimensions In Health Service, April 1979, pg 21.

are done by an anaesthetist. For any patient over 45 or 50 years old, a chest x-ray and an EKG are done, as well.

Patients from outside the hospital area should have lab results from a urinalysis and haemoglobin test, a history report, results from a complete physical exam and a consent form. In this way a patient from outside the hospital area can be evaluated in the same way as a patient from within the hospital area.

A patient over the age of 50 from outside the hospital area, who is being considered for day surgery, should have a chest x-ray and EKG taken to ensure that he/she is healthy enough to withstand the outpatient procedure.

Patient Flow

On the day of the operation the patient would arrive at the reception area where he/she would change into a surgical gown and slippers. Weight, blood pressure, pulse and temperature would be taken. The anaesthesiologist then visits the patient to inform him/her of the procedure and to answer any questions. A nurse then escorts the patient to the operating room. This nurse helps counteract the patient's helpless feeling and serves to maintain a positive attitude. Patients with local anaesthetics are transported on a cart.

Children are carried in and are allowed to bring in their favourite toy or blanket. In addition, one parent should be

in the recovery room as soon as the child is awake.[17]

After the operation patients should be taken to a regular recovery room. After reawakening from anaesthesia, adults in the recovery room should be given liquids and crackers orally. When able to ambulate, they should be taken by wheelchair to the day room where intravenous fluids are discontinued. They should rest here in chairs until they can be discharged.

Children, after awakening, should be taken to the day room and fed cola and crackers or formula, depending on the age. After counselling by the surgeon and the anaesthesiologist, patients should be discharged.[18] The patient should also be given a leaflet of do's and dont's upon discharge e.g., don't drive. An appointment for a follow-up visit to the outpatient clinic should be made as well.

At the end of the operation, the patient's G.P. should be phoned to inform him/her that the patient has had his/her operation and is returning home as planned.[19]

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[17] Salman, J., "O.R. Nursing in Ambulatory Surgery" in AORN Journal, March 1979, pg 266.

[18] Patterson, J. et al, "Ambulatory Surgery In A University Setting" in JAMA, Jan. 19, 1976, pg 266.

[19] Burn, J., op. cit., pg 799.

2.3 DAY SURGERY AT U.A.H.

The University of Alberta Hospital is presently running an eight bed day surgery unit. Openings in the O.R. schedule are used as there are no surgical suites dedicated specifically to day surgery.

The day surgery procedure, from booking to patient discharge to patient follow-up, runs closely along the lines of the common established procedure mentioned in the previous section. The patient is admitted through the main admitting area and is then taken to Station 66 where he or she changes and is prepared for surgery. The patient is then transported to the main O.R. where the surgery takes place. After surgery, the patient recovers in the main recovery room and is then transported back to Station 66. After a suitable length of time, the patient is discharged.

There are two main variations between the U.A.H. day surgery program and the common established procedure. The first one is a large variation, the second is a small one. They are:

A) With respect to the booking procedure- The day surgery bookings at U.A.H. are made 8-12 months in advance of surgery. Many have to be cancelled or rescheduled due to either patient or physician unavailability.

B) With respect to the pre-admission procedures- While

> Edmonton patients are required to attend a pre-surgical clinic 2 days prior to surgery and patients outside Edmonton are required to submit lab results from a blood test and a urinalysis as well as a history and consent form, they are not required to present a very recent physical.

Many, if not all, the variations will conform with the common established procedure once the Day Surgery unit of the Walter C. Mackenzie Health Sciences Centre is opened.

A little background on the Health Sciences Centre is in order before explaining about the day bed unit to be opened in the new facility.

The Health Sciences Centre project was approved by the Government of Alberta in October 1976. At the Government's request, the project was separated into two phases and the funds were allocated for the Phase 1 development.

The Health Sciences Centre Phase 1 was planned to be constructed in three stages. Phase 1, Stage 1 is located west of the existing 1957 wing. It consists of a parking level, a basement level and five floors containing hospital service facilities, Emergency, Administration, Radiology, Clinical Laboratories, the Surgical Suites, the Obstetrical Suites and approximately 290 inpatient beds including the intensive care areas. This stage will provide 633,276 gross square

feet of new space and will rehouse the functions at present located in the Clinical Services Wing, the Mewburn and Wells Pavillions, the 1912 and 1929 Wings and the Kitchen and Stores areas. The southern part of stage 1 will rehouse the Provincial Laboratory and provide space for the initial implementation of the Heritage Medical Research program.

Stages 2 and 3 of Phase 1 will connect to the eastern face of the Medical Services Building. These combined stages will house a 400 seat auditorium, the relocated Medical Sciences Library, audio-visual teaching facilities and administrative space for the University Hospital and the Faculty of Medicine of The University of Alberta. Together Stages 2 and 3 will provide 155,464 gross square feet of new building space.

Phase 2 will contain the Ambulatory Care and Clinical Departments, the Public and Administration Services, The Education and Research Services, Rehabilitation Medicine, Respiratory Therapy, Microbiology, 25 Hostel Beds and 553 Inpatient Beds including Intensive Care Beds.

At the present time, only the support services occupy space in the lower level of Phase 1, Stage 1 of the Health Sciences Centre. The first patients are scheduled to be moved into the new facility in February of 1982.[20]

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[20] The University of Alberta Hospital Board, A Proposal for Phase II. June 1979, pg 2 and accompanying tables.

The day surgery unit of the H.S.C. is scheduled to be operational sometime in 1983. It will contain a 40 bed Day Ward and will be adjacent to 4 day surgery operating suites as well as the Endoscopy and Cystoscopy suites. It is expected to have separate booking and reception areas allowing for the smooth running of the unit.

2.4 COSTING AND EVALUATION STUDIES

Costing and evaluation studies on day surgery versus inpatient surgery are few and far between. These studies began appearing in the various journals in the early and middle 1970's. The majority of these studies apply to the United States making some of their conclusions impossible to extrapolate to Canada, given the differences between the Canadian and American health care delivery systems.

In the U.S. these studies use a comparison of charges which reflect the economic policies of the hospital rather than treatment generated costs. The per diem comparison, which is just the hospital's total budget divided by the number of inpatient days, is also used. The latter method, however, includes outpatient costs in the inpatient per diem charge and is to some extent inaccurate. As well, many of the American studies examine patient savings rather than hospital savings.

In 1973 a Florida Blue Cross study looked at patient savings in day surgery versus inpatient surgery. The study took all one and two day stay patients and found that approximately 34% were possible outpatient candidates. This accounted for 15% of all Florida Blue Cross patients in 1973.[21] Among the numbers discovered by the study was that the average length of stay of all FBC patients was just over 6 days, the median length of stay was just under 4 days and the modal length of stay was 2 days. As well, they found that the average per diem charge was $111.00 and the average charge per case was $671.00. One and two day stays in hospitals accounted for 27% of all cases with the former accounting for 9.5% and the latter accounting for 17.5%. The average cost per day and per case were $190.00 and $190.00 for one day stays and $144.00 and $288.00 for two day stays.[22]

Before any conclusions could be reached five assumptions were made. Firstly, an inpatient to outpatient conversion avoids the routine daily service charge but incurs a clinic visit charge. Secondly, it was assumed that a one day inpatient becomes a one day outpatient with one or more follow-ups. A two day inpatient becomes a two day outpatient with two or more follow-ups. Thirdly, special service charges,

[21] Elnicki, R.A., "Substitution of Outpatient for Inpatient Hospital Care: A Cost Analysis" in Inquiry, Vol XIII Sept 1976, pg 247.

[22] Ibid, pg 249.

which would probably be less for outpatients than for inpatients due to less tests, were taken to be the same. Fourthly, travel costs were examined. Fifthly, lost earnings were examined.[23]

The study's cost analysis found that if all 15,595 one day inpatient cases had been converted to outpatient cases, the savings would have been over $1,000,000. This is minimal in relation to the total inpatient hospital charges, travel costs and lost earnings estimated at $175,400,100. Therefore, the savings were .6%. For two day stays, the savings were 2.4%. However, if the special service charges are cut in half for outpatients with everything else remaining equal, the savings would increase from 2.4% to 4.6%. If all variables are cut by 50%, the savings become 5.2%.

The conclusion of the study was that since the savings were minimal, i.e. at most 7.7% if all special service charges were eliminated due to the substitution, the costs would not be substantially reduced,especially since not all one and two day stay patients could be transformed into outpatients.[24]

This study has many limitations. Since exact costs were not considered, the savings could conceivably be larger. Longer stay patients were not considered which is another

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[23] Ibid, pg 250-251.

[24] Ibid, pg 254.

study flaw. Many of these patients can be treated on an outpatient basis without follow up which would increase savings.

Another limitation has to be the fact that closing the beds was not taken into account. A Connecticut study showed that transfering inpatients to outpatients would reduce patient days, supply expenses, hotel service expenses i.e., dietary, housekeeping, laundry, maintenance of personnel, plant operations and repairs and maintenance.[25] Some of these costs would be picked up by the outpatient department, however, there would still be large savings and these could be passed on to the patient.

Other American studies show that the savings may be substantial. An early 1970's study at Watts Hospital in Durham, North Carolina, showed that there could be up to a 25% savings if some inpatients were outpatients. The study compared 166 matched pairs comparable in age, sex, diagnosis, operative procedure and anaesthesia. They found the average inpatient cost to be $240.66 while the average outpatient cost was $179.97.[26]

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[25] Ibid, pg 257.

[26] Davis, J., "Correspondance" in Annals of Surgery, Vol 175 No 6, pg 856.

A 1969 Davis-Russell study found large savings when an outpatient care package was compared to the same inpatient care package. The one major flaw of this study however, was the average outpatient mix. It included 1) visits for tests, 2) emergency and non-emergency care visits and 3) clinic care. All are more of a substitute for physician office visits rather than inpatient services.[27]

Large variations in savings were found using the same procedure in two different cities. A Dilatation and Curettage in Washington, D.C., showed a $73.00 savings while the same procedure in Phoenix resulted in a $117.00 savings. What this does show is that the savings are present and they can be substantial.

Canadian studies of savings from substituting outpatient surgery for inpatient surgery look primarily at hospital savings rather than patient savings. This is because Canadian hospitals are financed largely by third party payers such as the provincial government health schemes and the average patient pays little, if anything, for his medical care.

The most indepth Canadian studies come from British Columbia since they have the most well developed day surgery programs, in terms of the types of procedures done, in Canada. In 1978, 33% of all surgery done in B.C. was day sur-

[27] Elnicki, R.A., op. cit., pg 248.

gery. Many of these studies take place at the Children's Hospital in Vancouver, where in 1978, 57% (5193 cases) of all surgical procedures were done in day surgery.[28]

As it was felt that previous research had not adequately addressed the question of savings because it tended to rely either on the per diem rate or on a comparison of charges, a previous study by Evans and Robinson at the Children's Hospital looked at the costs per episode of illness of inpatient versus outpatient surgery.

One important assumption must be made for the study's results to show savings. This assumption is that the inpatient load falls by the amount equal to the increase in day surgical procedures, therefore, the overall volume stays the same. In the long run this means that capital and staffing can be reduced. As can be expected, no savings will result if the inpatient volume remains the same before and after the increase in the number of day surgical procedures.[29]

The study compared day surgery patients to comparable inpatients. Only the costs associated with that type of admission were looked at. Hospital per diem costs were irrelevant, while travel and work costs were found to be

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[28] Evans,R. & Robinson,G., "Surgical Day Care: Measurement Of The Economic Payoff" in CMA Journal, Nov. 8, 1980, pg 873.

[29] Ibid, pg 877.

negligible.[30]

The first stage of the study involved dividing the total hospital expenditures among the service departments to identify specific services which were or were not associated with day surgery. The various subdivisions were allocated based on square footage of functional area. These subdivisions were overhead expenses, plant maintenance, wages and salaries, housekeeping costs, laundry and linen, dietary, drug expenses and med/surg supplies. This preliminary total for the outpatient department expenses was then divided up into the outpatient department and day surgery.[31]

Other expenses were divided differently. The nursing administration expense was allocated according to the number used in the day care unit. Medical records and photography were allocated by the percentage of time spent by staff on the day care unit.

The result was 16 final cost centers plus a general administration expenditure component. Six of the cost centers were relevant to the day care unit.[32] Radiology and lab expenses were allocated by expense per day care unit admission or patient.

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[30] Evans,R. & Robinson,G., An Evaluation of the Economic Implications Of Day Surgery. Unpublished report, pg 12.

[31] Ibid, pg 31.

[32] Ibid, pg 37.

When the final costs were totalled, the day care unit expenses came to $28.11 per episode plus $0.41 for non-dental radiology and $1.71 for lab expenses for a total of $30.33. When operating room and recovery room costs were allocated, the full cost for the day care unit was $91.94 per patient. A comparable inpatient expense was $176.38.

A similiar study completed in the same hospital in 1975 showed a typical non-dental outpatient procedure costing $150.00, while the same inpatient procedure cost was $500.00. This was a savings of 70%. Significant savings were found in the patient care areas, lab, radiology and other diagnostic procedures probably due to the fact that a longer length of stay results in more tests.[33]

It should be remembered that these are long run cost savings since it assumes all costs are variable. A problem arises however, because a day care unit will result in an increased utilization of hospital services. Many day surgery patients would either remain untreated or would have been inpatients. This may also mean that costs may not be reduced if the beds freed by the increase in day surgery patients are used for unnecessary inpatient operations.[34] Therefore, even though long run cost savings are predicted,

[33] Evans,R. & Robinson,G., "Surgical Day Care: Measurement Of The Economic Payoff" in CMA Journal, Nov. 8, 1980, pg 867.

[34] Evans,R. & Robinson,G., An Evaluation Of The Economic Implications Of Day Surgery. Unpublished report, pg 50.

the assumption that the inpatient beds will be closed, is a significant one.

At the University of Ottawa, several M.H.A. research projects have reported disease costing studies similar to this one. Villemure apportioned service department costs to patients according to the services the department provided. For example, the costs for laundry and linen were allocated using the cost for the number of pounds per case while for housekeeping the apportioned cost was derived using time and supplies per day as the variable. The cost of each variable was determined and the results concluded that there were significant savings by doing a D & C in day surgery as opposed to inpatient surgery. The study was conducted at St. Joseph's Hospital in Hamilton.[35] Heidemann, in her study at the Ottawa Civic Hospital, used a disease costing methodology to calculate, compare and analyze the costs of hospital treatment. She compared groups of patients undergoing two obstetrical and gynecological procedures to see the differential impact of hospital acquired infection. The total hospital operating costs were allocated to Hotel Services, Nursing Services and Diagnostic and Treatment Services. Here, as well, the various operating costs were divided by the appropriate unit output variable and these costs were apportioned to the patient. For example, the operating

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[35] Villemure, Sr. J., Outpatient Surgery: A Cost Saving Study. M.H.A. Research Paper, 1973.

costs for Hotel Services were divided by the total number of patient days to obtain a cost per patient day.[36] Linder, in her study at The Montreal Childrens' Hospital, used operating costs, cubic feet and paid hours to determine the total operating costs and then divided these operating costs for each department by the total number of patient days to derive a cost per patient. For all three studies the cost per patient for the various departments were added up to form a cost per procedure. Linder's results showed a significant savings if a hernia operation would be done in day rather than inpatient surgery.[37] Finally, Sister P. McKeon, in her study at the Ottawa Civic Hospital, reviewed the cases of a sample of patients to determine how many of them could have been transferred from inpatient to day surgery in accordance with criteria similar to those presented above (Section[38] 2.2).

With costs playing a greater role in what and how much health care services are offered, much consideration has been given to expanding the less expensive day care units and contracting the inpatient facilities. Consequently, many more studies are now underway to examine the cost sav-

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[36] Heidemann, E., The Financial Impact Of Hospital Acquired Infection. M.H.A. Research Paper, 1975.

[37] Linder, M., Comparative Costs Of Day Care And Hospitalization. M.H.A. Research Paper, 1979.

[38] McKeon, Sr. P., Providing Health Services to Patients Who Have Out-Patient Surgery. M.H.A. Research Paper, 1975.

ings associated with a shift from inpatient to outpatient surgery. To determine potential cost savings it is important to know both cost and day savings per transferred patient and the number of patients one can expect to transfer.

Chapter III

METHODOLOGY

3.1 MODEL BUILDING ASSUMPTIONS

A study of this kind involves at least a few assumptions. One assumption involves deciding what is needed to come up with a fair cost per illness episode. This study examines the savings associated with converting different surgical procedures from inpatient to outpatient surgery. Therefore, a number of surgical procedures that can be done both on an inpatient and outpatient basis are needed. Next, a study population is needed. This population has to have been involved in one of the procedures and must meet the guidelines set forth to be eligible for day surgery i.e., age, physical condition and distance from the hospital, among others, for savings to be realized.

As well, data has to be collected on the surgical procedures with patients who have undergone one of these procedures. The data is collected from the charts in the Medical Records department however, since going through all the medical records for each procedure would be time consuming and unnecessary, only a proportion that would be representative of the entire number of cases are needed. Since one of the

objectives of the study is to examine cost savings, in real numbers, all fixed, semi-variable and variable costs must be examined. This study assumes that the savings from substituting day surgery for inpatient surgery are either short run or intermediate run savings but not long run savings. Therefore, areas such as capital and hospital services costs would be fairly fixed. Items such as drug expense, med/surg supplies, nursing, radiology and lab expenses would be variable.

The variable information is collected from the medical records data. The rest of the information is collected from the various departments. Costs can then be attached to each procedure done in inpatient surgery and done in outpatient surgery and a comparison can be made.

Another assumption made in this study is that the inpatient procedures under investigation can all be done on a day surgical basis. Therefore, a verification was undertaken using the patient classification system. These forms were given to head nurses who were asked to fill one out for the procedure they are most familiar with. The objective here was to verify that the patients undergoing the procedure under investigation could actually be discharged on the same day as the surgery i.e., the procedure could be done in day surgery.

The result of this investigation is a costing model whereby the same procedure done on an inpatient and outpatient basis can be compared to calculate possible cost savings.

Briefly, this model involves firstly, selecting a representative number of cases from the total number of cases of a particular procedure. Then the information gathered from the medical records including, patient's age, ward, drugs and tests is correlated. The next step is to gather cost information. This information depends on whether your objective is to examine short, intermediate or long run savings. This study examines short or intermediate run savings so fixed costs include, among others, laundry, dietary and housekeeping. Semi-variable costs include, among others, nursing costs and variable costs include, among others, drug and supply expenses and lab and radiology expenses. The costs are then attached to the various procedures and a final cost per procedure for inpatient and outpatient surgery is obtained. The costs can then be compared and the savings derived.

Each aspect of the above model is explained in further detail as the study progresses.

3.2 HOW THE DATA WAS CHOSEN

An article by Shah in 1980,[39] listed the 30 top day surgical procedures in B.C. in 1977 (see Appendix B) by number. A list was compiled by the Health Records Analyst at the University of Alberta (U.A.H.) of how the U.A.H. compared to B.C. Each of the top 30 procedures was duplicated with an inpatient and outpatient column listing how many of the particular procedure were done on an inpatient basis and how many on an outpatient basis at U.A.H. (see Appendix C). A subsequent list of the top 25 day surgical procedures at U.A.H. was drawn up. This list also had the number of these particular procedures that were done on an inpatient and outpatient basis. After comparing this list with the U.A.H. list of approved day surgical procedures, the six procedures with the largest difference between the number of procedures done as an inpatient versus as an outpatient were selected for study. The International Classification of Diseases, Adapted (ICDA-9) codes for these procedures were specific enough to preclude any errors due to procedure variation. These six procedures seem to have the largest potential for being converted from inpatient to outpatient procedures.

The six procedures are Dilatation and Curettage, Laparoscopy, Non-Recurrent Inguinal Hernia, Breast Biopsy, Cataracts and Haemorrhoids. A brief description of each proce-

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[39] Shah, C.P., op. cit., pg 402.

dure precedes the data collected from each of the procedures.

3.3 SELECTION OF THE STUDY POPULATION

Once the particular procedures were selected, the medical records had to be examined to extract the relevant data from each patient's file. To examine every chart for each procedure would have been extremely time consuming, therefore, a percentage of charts from each procedure was selected. What was wanted was a representative sample of all the patients undergoing that particular procedure on either an inpatient or outpatient basis. For most procedures 10% of the total number of charts satisfied this requirement.

The next step was to extract the required information from the charts. There were two categories of data extracted, demographic and med/surg data. The demographic data included the patient's age, residence and hospital ward. The med/surg data included the length of stay, whether or not there were pre- or post-operative complications, drugs prescribed and used and tests requested. This information was then compiled to give a typical patient profile for each procedure. Age, complications and residence were used to see how many patients, of those selected, met all the criteria for day surgery.

The required number of charts were selected randomly from the total number of charts and each chart was examined and the information from it was compiled. No charts were replaced or substituted once the necessary number was chosen.

3.4 INFORMATION GATHERING

Various types of data and information were collected from numerous departments within the U.A.H. The following is a list of these departments accompanied by a brief description and the type of information collected from each department.

Admitting Department

The U.A.H. Admitting Department processes the admissions of both inpatients and outpatients. Whenever possible, pre-admission forms are sent to the patient to cut down on the time needed to fill in the forms at the hospital, thus speeding up the admission process.
The information about the admission process of both types of patients was obtained from this department.

Department of Anaesthesia

Anaesthesia administered to outpatients is, in many respects, the same as that administered to inpatients. However, for outpatients, either the dosages are reduced or short acting substitutes replace the inpatient anaesthesia so that recovery time is cut thereby allowing the patient to go home the same day.

The information obtained here was the types of anaesthesia used for the various procedures. This allows for the attaching of costs to the anaesthesia to determine whether or not these costs are relevant.

Dietary Department

Outpatients and Day Care patients receive one meal per day plus any juices and other nourishment which may be provided by the nurses. Inpatients receive three meals a day plus miscellaneous beverages.

The daily costs of feeding the patients was obtained from this department.

Housekeeping Department

The routine for an inpatient room involves changing the linen once a week if the length of stay is greater than 7 days or before each new admission to the bed. As well, the rooms are cleaned and washed every day. The routine for a day surgical bed involves changing the linen and cleaning and washing every day.

Housekeeping costs were obtained from this department.

Laboratory and Radiology Departments

There seems to be a decreased number of tests and x-rays involved in day surgery as opposed to inpatient surgery. The paperwork involved however, seems to remain fairly constant for both types of patients.

The costs of the various tests and x-rays were obtained from this department.

Laundry and Linen

The laundry and linen are sent to, and return from, an offsite facility run by the U.A.H. The volume for both inpatients and day surgery patients is assumed to be the same.

The cost of this service was obtained from this department.

Medical Records Department

The Health Records Analyst works out of this department. She is primarily involved in compiling information for various medical audits. Charts may be pulled by the medical records staff for examination by various physicians or authorized hospital personnel by their request. The department is in the process of converting its files to microfilm.

The list of the 25 top U.A.H. day surgical procedures and the corresponding U.A.H. numbers for the top 30 B.C. procedures as well as, the medical charts were obtained from this department. The medical record cost per patient was also obtained.

Nursing Administration Department

The Nursing Administration Department is responsible for, among other things, examining nursing costs on various wards in terms of what they should be and whether they were over or under the projected costs. Supply expenses and the administrative cost per patient day were also examined.

It is these costs and expenses that were obtained for the various departments.

Nursing Systems

This department of nursing is ultimately responsible for the day to day nursing staffing with future projections being involved as well. Patient classification forms which yield information about the type of patient and how much nursing care he/she needs are compiled per ward to tell the nursing systems director whether a ward is under or over staffed. The director can then compensate.

Information about the patient classification system, as well as how to use it was obtained from this department.

Day Surgery Ward

At present, this is an eight bed ward at U.A.H. Information about how this ward is run was obtained. The costs of operating the day surgery ward include nursing,

dietary, housekeeping, administration, plant, supply, drug and test costs. Each of these costs were obtained from the relevant departments or areas.

Pharmacy Department

Medication is dispensed to the day surgical patient in the same way as to an inpatient. Before the operation the patient is given any sedative or anaesthetic needed and post-op pain killers and drugs to combat the nausea are usually given.

The costs of the various drugs and the dispensing cost per drug were obtained from this department.

Each of these departments had a very real and important part to play in the formulation of this study. Inability to gather information from any of these departments would have led to possible threats to validity.

3.5 VERIFICATION METHOD

For this study to have any validity, there had to be some sort of verification method to ensure that the six procedures under investigation could, in reality, qualify as possible day surgical procedures. The method chosen was to speak to the nurses in charge of the relevant stations and to get their opinion of whether or not, based on the amount and type of nursing care necessary, the patient recovering

from the particular procedure could do so just as well at home as in the hospital. This opinion was conveyed using the Medicus System Patient Classification Form.

A detailed discussion of the entire Medicus Nurse Staffing System is beyond the scope of this study, however, a brief overview is given here to acquaint the reader with the broad parts of the system. A more detailed discussion can be found in Appendix D.

The Medicus approach to developing a Nursing Information System is comprised of:

a) Patient Classification
b) Workload Measurement
c) Quality Monitoring
d) Long Range Staffing
e) Variable Staffing and
f) Management Reporting.

The basic Medicus System can be altered to suit the needs of any hospital or health care facility. It allows for the constant ongoing evaluation of all aspects of the Department of Nursing.

The Patient Classification System is used as a basis for measuring workload on a nursing station. Patients are grouped into categories, Type I to Type V, based on their need for nursing care. These categories are acuity indica-

tors and reflect the acuity of a patient's illness by the amount of nursing care needed. Type I indicates a patient has minimal nursing care needs, Type II to Type V indicate increasing amounts of patient care needs. This translates to 0-2 hours of nursing care for a Type I patient in a 24 hour period, 2-4 hours for a Type II, 4-10 hours for a Type III and 10-20 hours for a Type IV or V.

Each morning the nurse in charge on each station fills out the Patient Classification form. Using a Medicus ruler, a numerical total is figured out for each category. This total is added up for each patient and the final figure corresponds to an acuity classification. The completed forms are then sent to the Nursing Systems office where they are used as the basis for the other areas of the Medicus System.

For each of the six procedures a Patient Classification form was filled out by the charge nurse who would most often come into contact with the patients recovering from the particular procedure. Each nurse was asked to classify a patient admitted for the given procedure at four different times during that patient's stay. The first time was the day admitted, the second time was immediately post-op, the third time was the evening of post-op at approximately 6 or 7 p.m. and the last time was the day after surgery.

The results from this classification were essential to the study. Here, as well, there may have been possible

threats to validity if the verification had not been included.

The results of this verification are discussed in the next chapter.

Chapter IV

DATA COLLECTION

The six procedures chosen to be examined for this study are Dilatation and Curettage of the Uterus, Laparoscopy, Non-Recurrent Inguinal Hernia, Breast Biopsy, Cataracts and Haemorrhoids.

For each of the six procedures chosen from the combined Canadian top 30 day surgical procedures adapted to U.A.H. list and the U.A.H. top 25 day surgical procedures list, a representative sample of at least 10% of the charts were studied. Inpatient charts and day surgical charts were examined separately. Table 1, shows how many inpatient and outpatient charts were available, how many were studied and the percentage of the total that represents for each procedure.

Each of the two categories from which data was collected served a distinct purpose. The demographic data, i.e. age, residence and presence or absence of complications was the basis for deciding whether or not a patient could have undergone the same procedure on a day surgical basis. The prerequisites were; age less than 65, residence closer than 180 km, and the absence of complications. The other catego-

TABLE 1

Number of Charts

	Inpatient			Day Surgery		
	sample	total	%	sample	total	%
D & C	40	396	10.1	12	101	11.8
Laparoscopy	27	270	10.0	8	66	12.1
Hernia	25	254	9.8	3	14	21.4
Breast Biopsy	14	137	10.2	3	14	21.4
Cataracts	35	350	10.0	0	0	0
Haemorrhoids	10	90	11.1	0	0	0

ry, med/surg, i.e. drugs, tests and length of stay was the basis for a costing profile for a particular procedure.

The following pages contain a brief description of each of the procedures as well as a summary profile from the medical charts of an inpatient and day surgical patient for that particular procedure.

4.1 PATIENT PROFILES

1) Dilatation and Curettage of the Uterus

This procedure involves the stretching and removal of material from the uterine cavity using a curet (a spoon shaped scraper). This procedure is more commonly referred to as a D & C.[40]

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[40] Dorland's, Medical Dictionary 25th edition, 1974, pgs 390 & 445.

For this procedure 40 inpatient and 12 day surgical charts were examined.

The summary profile for these women for inpatient surgery is as follows. Sixty percent of these women were beyond child bearing age in the 40-64 age range. The average length of stay for the women studied was 2.9 days. Pre-op medication consisted of Dalmane for 88% of the patients while slightly over 50% were given Morphine.[41]

The anaesthesia used in 95% of the cases consisted of thiopental sodium as an induction agent with nitrous oxide-oxygen, halothane or enflurane used for maintenance agents.

Post-operatively, just over 50% of the patients received a pain killer and/or something for the nausea. The most common drugs given were 292s and Gravol. Dalmane was given post-op in almost 40% of the cases and Stemetil was given in 25% of the cases.[42]

In almost 100% of the cases three tests were given. These were 1) a complete blood count (CBC),[43] 2) a urinalysis and 3) a blood serology test. In 25% of the cases an

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[41] Both Dalmane and Morphine are sedatives given to patients before bed time or a few hours prior to surgery. In some cases they replace some of the anaesthesia necessary during the operation.

[42] Stemetil is a tranquilizer given every 4-6 hours.

[43] A CBC examines the haemoglobin, white blood count, differential and either the red blood count or the haematocrit.

SMA 12 and/or electrolytes tests were given.[44]

Seven and a half percent of the inpatient sample had pre-op complications, however, none had post-op complications. Two per cent of the patients were over 65 and 5% lived further than 180 km from the hospital.

The day surgery patient profile was similar in many ways to the inpatient profile except in the area of tests done.

Almost 60% of the day surgery patients were in the 17-39 age group and the rest were in the 40-64 age group.

A pre-op medication difference was observed between the inpatients and the day surgery patients. While almost 60% had Morphine pre-op, the other 40% had no pre-op medication. The anaesthesia was the same for both groups. Post-op medication was also similiar. Sixty percent were given 292s, 58% were given Stemetil and 45% were given Gravol.

As mentioned, the big difference was in the area of tests. Ninety percent had a haemoglobin test taken and 60% had a urinalysis done.

The results are summarized in Table 2.

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[44] Both the SMA 6 and 12 and electrolyte tests are multichannel analyses. The SMA 6 or 12 examines 6 or 12 blood proteins and the electrolytes test examines sodium, potassium, chloride and carbon dioxide content of the blood.

TABLE 2

Patient Profile - Dilatation and Curettage

	Inpatient		Day Surgery	
	#	%	#	%
PATIENTS- total	40	100	12	100
age- 17-39	13	33	7	58
40-64	24	60	5	42
DRUGS- Pre-op				
Dalmane	35	88	0	0
Morphine	21	53	7	58
None	0	0	5	42
Post-op				
292	20	50	8	67
Dalmane	15	38	0	0
Stemetil	10	25	7	58
Gravol	21	53	5	42
TESTS CBC	40	100	0	0
Haemoglobin	0	0	11	92
Urinalysis	39	98	7	58
Serology	40	100	0	0
SMA 12	10	25	0	0
Electrolytes	10	25	0	0

2) Laparoscopy

This procedure is an examination of the interior of the abdomen using a laparascope.[45]

Twenty seven inpatient charts and eight day surgical charts were examined for this procedure.

Ninety three percent of the inpatients undergoing a laparoscopy were between the ages of 17-39. The average length of stay was approximately four days.

Dalmane and Morphine were prescribed pre-operatively 81% and 83% of the time, respectively. Anaesthesia consisted of thiopental sodium as an induction agent and succinylcholine as an induction relaxant with nitrous oxide-oxygen, fentanyl or enflurane as a maintenance agent and succinylcholine drip as a maintenance relaxant. Post-operative medication consisted of 292s in 70% of the cases, Gravol in 67% of the cases, Dalmane in 59% of the cases, Stemetil in 26% of the cases, Demerol in 19% of the cases and Surfak (a stool softener) in 19% of the cases.

One hundred percent of the sample had a CBC, blood serology and a urinalysis done. Nineteen percent of the cases also had an electrolytes done.

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[45] Dorland's, Medical Dictionary 25th edition, 1974, pg 836.

While there was only one patient over 65, there were complications in 26% of the cases and 30% of the sample lived further then 180 km.

As with the D & C, the day surgery patients differed primarily in the area of tests.

Seventy five percent of the day surgery patients were in the 17-39 age group. Pre-op drugs consisted of Morphine to 50% of the cases, Atropine‘‘ to 25% of the cases and 25% had no pre-op medication.

Anaesthesia remained virtually the same. Post-op medication consisted of Gravol for 50% of the sample and 292s, Stemetil and Demerol each for 38% of the sample.

The tests done were a haemoglobin and a urinalysis for 100% of the cases.

The results are summarized in Table 3.

3) Non-Recurrent Inguinal Hernia

A hernia is the protrusion of a loop or knuckle of an organ or tissue through an abnormal opening. An inguinal hernia usually involves a hernia of the intestine into the inguinal canal. Hernias can be recurrent or non-recurrent. For the purposes of this study only the non-recurrent ingui-

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‘‘ Atropine is a relaxant of the gastro-intestinal, biliary and genito-urinary tracts.

TABLE 3

Patient Profile - Laparoscopy

		Inpatient		Day Surgery	
		#	%	#	%
PATIENTS-	total	27	100	8	100
	age- 17-39	25	93	6	75
DRUGS-	Pre-op				
	Dalmane	22	81	0	0
	Morphine	24	89	4	50
	Atropine	2	7	2	25
	None	0	0	2	25
	Post-op				
	292	19	70	3	38
	Gravol	18	67	4	50
	Dalmane	16	59	0	0
	Stemetil	7	26	3	38
	Demerol	5	19	3	38
	Surfak	5	19	0	0
TESTS	CBC	27	100	0	0
	Serology	27	100	0	0
	Urinalysis	27	100	8	100
	Haemoglobin	0	0	8	100

nal hernia is studied.[47]

Twenty five inpatient charts and three outpatient charts were studied for this procedure.

This is the only procedure of the six where the newborn to 16 age group contained a significant number of patients, therefore, the typical inpatient profile varies widely. Forty percent of the patients were in the 40-64 age group, 28% were in the 65+ age group and 14% were in the NB-16 age group. The average length of stay was 5.5 days.

Pre-operative medication consisted of Morphine in 52% of the cases and Dalmane in 40% of the cases while Atropine was prescribed to 28% of the patients, mostly paediatric cases.

Anaesthesia was composed of thiopental sodium and succinylcholine as the induction agent and relaxant, respectively with nitrous oxide-oxygen, morphine and fentanyl or nitrous oxide-oxygen, halothane or enflurane as maintenance agents. Curare or pancorium were used as the maintenance relaxants.

Post-operative medication was composed mostly of pain killers. Demerol was used in 68% of the cases, Codeine in 44%, Gravol in 40%, Dalmane in 24% and Magnolax (a stool softener) in 24% of the cases.

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[47] Dorland's, Medical Dictionary 25th edition, 1974, pg 705.

The tests for this procedure varied as well. A CBC, urinalysis and blood serology were done on 100% of the cases. Sixty five percent had a chest x-ray done and 14% had an EKG and/or SMA 12 and/or electrolytes done.

Twenty four percent of the patients had complications, pre- or post-op. Seven patients lived further than 180 km however it should be noted that 4 of the 7 were less than 3 months old and the other 3 were 73, 77 and 92 years old.

Outpatient surgery for a hernia was done primarily on children under 5 years of age. Only 2 of the 14 day surgery hernia cases done in day surgery in 1980 were for patients over the age of 5.

The three representative cases examined for this study all fell into the NB-16 age category. Their pre-op medication consisted of Atropine with no pre-op anaesthetic or post-op medication recorded on their charts. The only test done on them was a haemoglobin analysis.

The results are summarized in Table 4.

4) Breast Biopsy

A breast biopsy is the removal and examination, usually microscopically, of tissue from the breast, performed to establish a precise diagnosis.[48]

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[48] Ibid, pg 202.

TABLE 4

Patient Profile - Non-Recurrent Inguinal Hernia

		Inpatient		Day Surgery	
		#	%	#	%
PATIENTS-	total	25	100	3	100
ages-	NB-16	6	24	3	100
	17-39	2	8	0	0
	40-64	10	40	0	0
	65+	7	28	0	0
DRUGS-	Pre-op				
	Dalmane	10	40	0	0
	Morphine	13	52	0	0
	Atropine	7	28	3	100
	Demerol	5	20	0	0
	Post-op				
	Demerol	17	68	0	0
	Codeine	11	44	0	0
	Gravol	10	40	0	0
	Dalmane	6	24	0	0
	Magnolax	6	24	0	0
TESTS	CBC	25	100	0	0
	Urinalysis	25	100	0	0
	Serology	25	100	0	0
	Chest x-ray	16	64	0	0
	SMA 6,12	14	56	0	0
	EKG	14	56	0	0
	Electrolytes	14	56	0	0
	Haemoglobin	0	0	3	100

Fourteen inpatient and three outpatient charts were studied for this procedure.

The inpatient profile consisted of 64% of the sample in the 17-39 age group and 36% in the 40-64 age group. The average length of stay was 3.4 days.

Pre-operative medication consisted of Morphine to 64% of the cases and Dalmane to 43%. The anaesthetic used was thiopental sodium as an induction agent and nitrous oxide-oxygen, halothane or enflurane or fentanyl or morphine as maintenance agents.

Post-operative medication consisted of almost 100% of the cases being given Gravol and/or Demerol and 64% of the patients being given Codeine.

A wide variety of tests were done on these patients. One hundred percent of the sample had a blood serology done, 93% had a CBC done, 93% had an SMA 6,12 done, 86% had a urinalysis done and 79% had electrolytes done.

Only 14% of the patients had any pre- or post-op complications. These 2 patients were admitted to have a mastectomy done. None of the patients were over 65 and none lived further than 180 km from the hospital.

Of the three cases examined for a typical day surgery profile, 2 were in the 17-39 age group and the other was between the ages of 40-64.

Pre-operative medication consisted of Morphine for 67% and no medication for 33%. Anaesthesia was the same as for inpatients. Post-operative medication consisted of Demerol, Gravol, Codeine, Stemetil and 292s , all in 33% of the cases.

Tests done were 2 urinalysis, 1 CBC and 1 haemoglobin.

The results are summarized in Table 5.

5) Cataracts

A cataract is an opacity of the crystalline portion of the lens. A cataract operation removes this lens and either cleans or replaces it with an artificial one.[4]

Thirty six inpatient charts were examined for this study. No outpatient cataract operations were performed in 1980.

This procedure was probably the most difficult one to gather a typical inpatient profile for. Of the 36 cases, 22 (61%) fell in the 65+ age category and 11 (31%) in the 40-64 age group. The average length of stay was 5.8 days.

The high age distribution played havoc with the drugs prescribed and the tests required for each patient. Ten different drugs were prescribed pre-operatively and seven post-operatively.

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[4] Dorland's, Medical Dictionary 25th edition, 1974, pg 272.

TABLE 5

Patient Profile - Breast Biopsy

		Inpatient		Day Surgery	
		#	%	#	%
PATIENTS-	total	14	100	3	100
	age- 17-39	9	64	2	67
	40-64	5	36	1	33
DRUGS-	Pre-op				
	Dalmane	6	43	0	0
	Morphine	9	64	2	67
	None	0	0	1	33
	Post-op				
	Gravol	13	93	1	33
	Demerol	12	86	1	33
	Codeine	9	64	1	33
	Stemetil	2	14	1	33
	Dalmane	5	36	0	0
	292	0	0	1	33
TESTS	CBC	13	93	1	33
	SMA 6,12	13	93	0	0
	Serology	14	100	0	0
	Urinalysis	12	86	2	67
	Electrolytes	11	79	0	0
	Haemoglobin	0	0	1	33
	Chest x-ray	5	36	0	0

Pre-op medication consisted of Valium to 83%, Atropine to 86%, Diamox[50] to 78%, Demerol to 72%, Chloral Hydrate[51] to 50%, Neosynephrine[52] to 41%, Mydriacyl to 36% and Dalmane to 28% of the sample.

The anaesthesia was composed of thiopental sodium and succinylcholine as the induction agent and relaxant, respectively. Nitrous oxide-oxygen with pancorium or curare were the maintenance agent and relaxant, respectively. Halothane and enflurane with fentanyl or morphine, can also be used as the maintenance agent and relaxant.

Post-operative medication included Atropine to 78%, Codeine to 92%, Metimyd drops[53] to 50%, Gravol to 33%, Chloromycetin[54] to 33%, Chloral Hydrate to 31% and Stemetil to 42% of the sample.

Five main tests were requested by the physicians. They were a urinalysis for 88%, a CBC for 86%, a chest x-ray for 81%, an EKG for 81% and an SMA 6,12 for 72% of the patients.

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[50] Diamox is used to decrease eye secretions in glaucoma.

[51] This is used as a sedative, especially for the elderly.

[52] This is used for symptomatic relief after eye surgery. It is a decongestant.

[53] These drops are used to reduce eye inflammation.

[54] These drops are used to clear up eye infections.

Sixty one percent of the patients were over 65, 22% had recorded complications, and 17% lived further than 180 km.

Not surprisingly, this procedure was not done on an outpatient basis. It is not even among the approved outpatient procedurs at U.A.H., However, given the revolutionary advances being made in this type of surgery and the fact that many U.S. and Canadian hospitals are now performing an increasing number of cataract operations on a day surgery basis due to these advances, it was felt that this procedure should be added to the study.

The results are summarized in Table 6.

6) Haemorrhoids

Haemorrhoids are a varicose dilation of a vein of the superior or inferior haemorrhoidal plexus, resulting from persistent increase in venous pressure. A Haemorrhoidectomy is an excision of the haemorrhoid(s).[55]

For this procedure 10 inpatient charts were examined. No outpatient procedures were done in 1980.

Two age groups made up the typical inpatient profile for a haemorrhoidectomy. Of the 10 cases studied, 50% of the patients were in the 17-39 age group and 40% were in the 40-64 age group. The average length of stay was just over 5

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[55] Dorland's, Medical Dictionary 25th edition, 1974, pg 700.

TABLE 6

Patient Profile - Cataracts

		Inpatient	
		#	%
PATIENTS-	total	36	100
age-	40-64	11	31
	65+	22	61
DRUGS-	Pre-op		
	Diamox	28	78
	Valium	30	83
	Demerol	28	78
	Atropine	31	86
	Chloral Hydrate	18	50
	Neosynephrine	15	42
	Mydriacyl	13	36
	Dalmane	10	28
	Post-op		
	Gravol	12	33
	Codeine	33	92
	Chloromycetin	12	33
	Atropine	28	78
	Metimyd	18	50
	Stemetil	15	42
	Chloral Hydrate	11	31
TESTS	CBC	31	86
	Urinalysis	32	89
	EKG	29	81
	Serology	36	100
	Chest x-ray	29	81
	SMA 6,12	26	72

days.

Pre-operative medication consisted of Morphine for 70% of the patients and Dalmane for 70% of the patients. The anaesthesia was thiopental sodium as an induction agent and succinylcholine as an induction relaxant. Nitrous oxide-oxygen, halothane or enflurane, or morphine or fentanyl was used as a maintenance agent. Post-op drugs prescribed were Demerol to 90% of the sample, Gravol to 70%, Stemetil to 40%, Metamucil to 70% and Mineral Oil to 60% of the sample.

Tests required were an SMA 6,12 and blood serology for 100%, urinalysis and CBC for 90%, chest x-ray for 50% and EKG for 40% of the sample.

There were only 2 complications, both pre-op, 1 patient over 65 and 1 patient living further than 180 km from the hospital.

Interestingly enough, despite the fact that this procedure is on the approved day surgery procedure list at the U.A.H., none were done in day surgery in 1980. This is one of the reasons why this procedure was selected for study.

The results are summarized in Table 7.

TABLE 7

Patient Profile - Haemorrhoids

		Inpatient	
		#	%
PATIENTS-	total	10	100
age-	17-39	5	50
	40-64	4	40
	65+	1	10
DRUGS-	Pre-op		
	Morphine	7	70
	Dalmane	7	70
	Post-op		
	Demerol	9	90
	Gravol	7	70
	Metamucil	7	70
	Mineral Oil	6	60
	Stemetil	4	40
TESTS	Serology	10	100
	Urinalysis	9	90
	CBC	9	90
	SMA 6,12	10	100
	EKG	4	40
	Electrolytes	4	40
	Chest x-ray	5	50

4.2 COSTS

This section looks at the costs involved in each procedure. It is split up into two sections. The first deals with the fixed costs, which are laundry, dietary, housekeeping, administrative, both general and nursing, plant operation and security and plant maintenance costs. The second deals with the variable costs, which are nursing, supply and central supply processing, drug and drug dispensing, test, medical record and O.R. costs.

Two areas should be clarified before proceeding. Firstly, it should be remembered that this study is examining the short to intermediate run cost savings, therefore, hospital services and capital, as well as the plant and its operating costs, are taken to be fixed and everything else is variable. Secondly, the variable category is composed of variable and semi-variable costs. Nursing costs are one example of semi-variable costs. While it may be argued that closing beds will not reduce the staffing requirements, closing a significant number of beds in any ward will reduce staffing.[56]

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[56] At the U.A.H., closing 4 beds on any one ward will reduce the staffing requirements on that ward.

As well, this study examines primarily the areas where there is a cost savings between substituting day for inpatient surgery. Due to the fact that the exact anaesthesia costs were difficult to isolate and were small in comparison to the rest of the costs, they were not computed. While adding these costs to both types of patients would increase the cost per day and per procedure, it would not substantially alter the savings or percentage of savings of substituting day for inpatient surgery.

4.2.1 Fixed Costs

Given the previous stated assumption on the short run savings, the fixed costs for the purposes of this study are laundry, dietary, housekeeping, administrative, both general and nursing, plant operation and security and plant maintenance.

Laundry and dietary facilities are housed in a 17.5 acre off site facility. The Industrial Services Centre (I.S.C.) services not only the U.A.H., but the W.W. Cross Cancer Institute and the St. Joseph's Hospital as well.[57] Housekeeping facilities are presently housed in the new H.S.C.

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[57] Nyland, B., "Insight Into Offsite Planning" in Dimensions in Health Service, June 1981, pgs 20-21.

Laundry

The laundry and linen facilities at the I.S.C. are capable of handling 7 million pounds of laundry per year with the capability of expanding to handle up to 10 million pounds per year.

Laundry and linen are picked up and delivered every day to the hospitals serviced by the I.S.C.

The average cost is approximately $6.50 per day for inpatients and approximately $5.00 per day for day surgery patients. The assumption here is that the laundry is of a basic ward nature i.e., sheets, towels,etc.

Dietary

The dietary department housed at the I.S.C. will be capable of producing 45,000 meals required each week by the hospitals it serves. The food is prepared off site and flash frozen. It is then transported to the hospital and heated, as the need arises, in a microwave. In the future the meals will be heated in the decentralized pantries in the H.S.C.

At present an inpatient receives 3 meals a day plus any miscellaneous beverages at a cost of $13.00 per day per patient. A day surgery patient receives 1 meal a day plus any miscellaneous beverages at a cost of $4.50 per patient.

Housekeeping

The costs for housekeeping are calculated using standard times for private rooms. These standard times were determined by a methods analyst in housekeeping. Both the inpatient and day care rooms are washed and cleaned every day. Also included are waste pick up and janitorial floor care. The costs, based on time required to clean a room or ward and time required to clean a bathroom, amount to $3.50 per day per inpatient and $6.50 per day per day surgery patient. The greater cost for the day surgery patient is attributable to the fact that sheets on a day care bed are changed every day, 5 days a week, while the sheets on an inpatient bed are changed only once a week.

Administration

These costs were determined using the 1980-81 Annual Return Of Health Care Facilities- Hospitals, Part One. The total operating cost of both general and nursing administration, taken separately, were divided by the total number of patient days to give a cost per patient day. The operating costs for the general administration were $6,123,420 and the operating costs for nursing administration were $1,486,286. Divided by the total number of patient days (311,370), the resultant cost per patient day was $19.66 and $4.77, respectively. The combined administrative cost per patient day was $24.43.

Physical Plant

The physical plant costs were divided into two sections. They were Plant Operation and Security and Plant Maintenance. The plant costs were determined the same way as the administrative costs. The total operating costs for plant operation and security were $2,041,962 and for plant maintenance, the total operating costs were $3,980,335. With the total number of patient days equalling 311,370, the resultant cost per patient day was $6.56 and $12.78, respectively. The combined plant cost per patient day was $19.34.

4.2.2 Variable Costs

Nursing

Nursing costs for inpatients were computed using the management reporting part of the Medicus System. This report compares actual to target in the area of patient statistics e.g., census, percent occupancy, numbers of personnel and productivity indices. These productivity indices measure the personnel hours and costs per standard patient day. This report is completed by a computer monthly and yearly for each nursing station.[58]

The costs per patient day are recorded below for each procedure. Since, for some procedures, two different patients recovered on two wards, costs for the two wards were

[58] Year's end at U.A.H. is March 31.

combined in the given percentages. For example, if 20% of the patients for a given procedure were placed on ward A and the other 80% were placed on ward B the costs would be computed as follows. (.2 x ward A costs) + (.8 x ward B costs) = total nursing costs per patient day for that procedure.

Dilatation and Curettage

Of the 40 total patients, 23 were placed on Station 64 and 17 were placed on Station 65. Costs were $38.20 on Station 64 and $55.30 on Station 65. The total cost was,

(.58 x $38.20) + (.42 x $55.30) = $45.38 per patient day.

Laparoscopy

All of the 27 patients were placed on Station 65. The cost per patient day was, therefore, $55.30.

Non-Recurrent Inguinal Hernia

Of the 25 total patients, 10 were placed on Station MP2, 9 were placed on MP6, 2 were placed on Station 37 and 4 were placed on Station 38. Costs were: MP2- $34.10, MP6- $53.70, Stn 37- $50.20, Stn 38- $49.10. The total cost per patient day was,

(.40 x $34.10) + (.36 x $53.70) + (.08 x $50.20) + (.16 x $49.10)= $44.84.

Breast Biopsy

Of the 14 total patients, 7 each were placed on Stations 51 and 55. The costs were $34.50 and $39.40, respectively. The cost per patient day was,

(.50 x $34.50) + (.5 x $39.40) = $36.95.

Cataracts

All 36 cataract patients were on Station 57. The cost per patient day, therefore, was $34.00.

Haemorrhoids

Of the 10 total patients, 5 each were placed on Stations 51 and 55. The cost, therefore, was the same as a breast biopsy at $36.95 per patient day.

Day Surgery Nursing Costs

The day surgery eight bed unit (Station 66) has 3 registered nurses (R.N.) working there. The three span a 7-5:15 shift with the first working a 7-3:15 shift, the second an 8-4:15 shift and the third a 9-5:15 shift. In this way, there is at least one R.N. on the unit at all times for the entire 10-11 hour patient day.

The cost per procedure of recovery is included in the O.R. costs. Costs for miscellaneous areas, such as portering, were not computed. The day surgery patients were placed on Station 66 for the day. The nursing cost per patient day here was $35.11. However, it should be realized that a patient day for day surgery consists of, at the most, 10-11 hours unless the patient is admitted to the hospital after surgery due to complications.

Supplies

The supply costs were computed similarly to the nursing costs. The total yearly supply costs for each ward that was needed were added up (drug costs were not included). The yearly total was then divided by 365 to give the cost per day and then it was divided by the number of beds on that particular ward to give the cost per bed day. These supplies range from instruments and med/surg supplies to office and general supplies.

For each procedure the applicable station supply costs were multiplied by the percentage of patients who were on that ward. As well, a supply processing cost of $2.40 per patient day was added on. This was determined by dividing the operating cost of Central Supply ($746,024) by the total number of patient days (311,370). The final total is the supply cost per patient day.

Dilatation and Curettage

Supply costs: Station 64 = $53,935, Station 65 = $20,885.

Beds: Station 64 = 42 , Station 65 = 22.

Cost per patient day: (.58 x $3.52) + (.42 x $2.60) + $2.40 = $5.53.

Laparoscopy

All the patients were placed on Station 65. The cost per patient day was $2.60 + $2.40= $5.00.

Non-Recurrent Inguinal Hernia

Supply costs: MP2= $26,384, MP6= $51,824, Stn 37= $69,537, 38= $43,392.22.

Beds: MP2= 19 , MP6= 19 , Stn 37= 33 , 38= 19.

Cost per patient day: (.4 x $3.80) + (.36 x $7.44) + (.08 x $5.77) + (.16 x $6.26) + $2.40 = $8.06.

Breast Biopsy

Supply costs: Station 51= $115,941 , Station 55= $128,496.

Beds: Station 51= 35 , Station 55= 38.

Cost per patient day: (.5 x $9.08) + (.5 x $9.26) + $2.40 = $11.57.

Cataracts

Supply costs: Station 57= $61,754.

Beds: Station 57 = 31.

Cost per patient day: $5.46 + $2.40= $7.86.

Haemorrhoids

Costs were the same as a breast biopsy. Costs per patient day were $9.17 + $2.40= $11.57.

Day Surgery Ward

All the patients were placed on Station 66. Supply costs were $1,206.40. This was divided by 260 days (5 days per week x 52 weeks) and the total was divided by 11 beds. The cost per bed day was $0.58 + $2.40 = $2.98.

Drugs

Drug costs were calculated using the 1981 prices which were obtained from the U.A.H. Pharmacy stock level computer printout.

Drug dispensing costs were calculated by dividing the department's total operating costs ($709,661 excluding drug costs) by an average of 6 doses per day times 311,370 patient days. The resultant dispensing cost per dose was $0.38.

The drugs in Table 8, are listed in alphabetical order with the common dosages, the number of times required per day followed by the size(s) stocked by the pharmacy and the price(s). In the case of either non reusable (nr) or single patient use (spu) drugs, the entire cost is attributed to the patient. The final column is the cost per day. This is composed of the number of times per day the medication is required multiplied by the cost of the medication. (In the cases where the medication was prescribed 4-6 times per day, an average of 5 times was used).

Tests

The test costs were derived separately for radiology, lab and EKG. The cost for a chest x-ray was determined by the radiology department. It should be noted that this cost does not include labour and is, therefore, underestimated.

TABLE 8

Drug Costs

Drug	Common Dosage	Times per Day	Size	Cost	Cost per Day
Atropine	.1,.4,.6%	1	.6 mg amp(nr)	.15	.15
Chloromycetin	.5%		15ml btl(spu)	2.83	2.83
Chloral Hydrate	500 mg	1	500 mg capsule	.02	.02
Codeine	15,30,60mg	4	30 mg amp(nr)	.19	.76
			15,30,60mg tab	.03,.04,.12	.48
Dalmane	15,30mg	1	15mg capsule	.07	.14
Demerol	25,50,75,100mg	4-6	25,50,75,100mg amps	.13	.65
			50mg tab	.02	.08
Diamox	250 mg	6	250 mg tab	.09	.54
Gravol	30,50 mg	4-6	50mg tab	.01	.05
			50 mg amp(nr)	.33	1.65
Magnolax			60ml	.30	.30
Metamucil	pack	1-3	1 pack	.16	.32
Metimyd drops	.5%		(spu)	3.29	3.29
Mineral Oil			60 ml	.18	.18
Morphine	10mg 1/pre op		10 mg amp	.16	.16
Mydriacyl	1%		btl(spu)	7.74	7.74
Neosynephrine	10%		5ml btl(spu)	3.02	3.02
Stemetil	10mg	4-6	5mg tab	.08	.40
			10mg amp(nr)	.82	4.10
Surfak	240 mg	1	240 mg cap	.07	.07
292		4-6	tab	.05	.25
Valium	2.5,5,10mg 1/pre op		10 mg amp(nr)	.35	.35

This problem should be alleviated when hospital radiology departments begin using the unit system.[59] Both the EKG and lab costs were derived using the unit system. For EKG, the total operating cost was $342,981 and the total number of units performed were 50,940. The resultant cost per unit was $6.73. For the labs, the total operating expenses were $8,096,780 and 31,199,328 units of lab service were performed. The resultant cost per unit was $0.26.

The tests in Table 9, are listed in alphabetical order with the number of units and the cost beside it.

Medical Records

When a patient is discharged, the chart is sent down to the medical records office. There it is checked to make sure all forms are present and then the attending physician verifies the information and signs off the chart. The medical record is then entered in the PAS (Professional Activity Study, similar to HMRI in Ontario) system and is then filed. The cost per patient was determined by dividing the department's total operating costs ($817,753) by the total number of discharges (27,741). The resultant cost per patient was $29.78.

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[59] Statistics Canada, Canadian Workload Measurement System - Diagnostic Radiology, 1982-83 edition. Statistics Canada.

TABLE 9

Test Costs

Tests	Units	Cost
Chest x-ray		5.00
CBC	8	2.08
EKG	2	12.47
Electrolytes	4	1.04
Haemoglobin	6	1.56
Serology (blood)	20	5.20
SMA 6,12	8	2.08
Urinalysis	6	1.56

Operating Room

The operating room costs include nurses and all supplies used in the O.R. The recovery room costs are also included. The cost per surgical procedure was derived by dividing the total operating costs ($2,279,027) by the total number of surgical procedures performed in 1980 (22,221). The resultant cost per patient was $102.56.

4.3 VERIFICATION RESULTS

For the assumptions that the six chosen procedures could be done on a day surgical basis to be valid, the patient would have had to have been recorded as a Type I or II for the evening of, and the day after, surgery. This is what was estimated for all the procedures except cataract surgery. (For the detailed forms, see Appendix E).

The results of this verification concluded that the care the patients received the evening of, and the day after, surgery, could have been done just as easily at home as in the hospital.

When concluding the case of cataract surgery, one point must be taken into account. The fact that 61% of the cataract cases examined were patients over 65 years old means that more than likely there is a heavy weighting towards the older age group when all cataract cases in 1980 are considered. It is generally known that patients in this age group require more care than patients in the younger age groups and this extra care may be the difference between a Type I and Type II patient.

Given the new strides being made in the field of cataract surgery, it is the author's contention that in the near future, this procedure will be able to be done on a day surgical basis. In fact, in many Canadian and American hospitals

day surgery cataract operations are presently being done. Can the U.A.H., given it is a large teaching hospital, be far behind the trend?

Now that all the relevant costs have been accounted for and it has been verified that 5 of the 6 procedures could definitely be done more frequently on a day surgical basis, and the other could probably be done in limited amounts in day surgery, the total cost per procedure can be formed. This is done in the next chapter.

Chapter V

COST PER PROCEDURE

The objective of this chapter is to put together all the data presented in the previous chapter to present a cost per procedure in day and inpatient surgery.

It was felt that it would serve no purpose to cost every drug and every test prescribed since it would not only raise the cost of each procedure, but it would also include the minority population who are either special cases or who have complications among the entire general study population. Keeping this in mind, it was decided to include only drug and test costs within a particular procedure if the drug was prescribed, or the test requested, of more than one quarter of the study population for that particular procedure.

It should be noted that 25% was used only as an arbitrary cutoff point to prevent classifying the minority of patients with the majority. However, some factors have to be taken into consideration when examining this number. When a patient is admitted to the hospital as an inpatient, there is more time for a physician to prescribe drugs, tests and x-rays. The shorter length of time that a day surgery patient spends in the hospital translates into less drugs, tests and

x-rays. Therefore, the under 25% of the patients who have had a test or x-ray requested or drug prescribed that does not appear among the other 75%, may actually not be special cases or patients with complications. These may represent patients who have had extra tests, drugs and x-rays ordered because they were admitted to hospital. It was felt, however, that there had to be some patients admitted to the hospital because they were special cases or had complications and that a cutoff point was needed to separate these patients from the rest. Therefore, an arbitrary 25% was chosen. The result may be that this figure is an over estimate of the actual number of patients who are special cases or who have complications which would ultimately result in the procedure costs in the following pages being under estimated. Should the reverse be true, i.e., the 25% is an under estimate, then the procedure costs are over estimated.

The per diem and procedure cost for each procedure are listed below . The figure in brackets indicates the percentage of people that either had the drug prescribed or the test requested for that particular procedure.

TABLE 10

Procedure Cost - Dilatation and Curettage

Cost	Inpatient		Day Surgery
Nursing	$ 45.38		$ 35.11
Supply	$ 5.53		$ 2.98
Laundry	$ 6.00		$ 5.00
Housekeeping	$ 3.50		$ 6.50
Administration	$ 24.43		$ 24.43
Plant	$ 19.34		$ 19.34
Dietary	$ 13.00		$ 4.50
Total	$117.18		$ 97.86
Drugs- Pre-op			
Dalmane(88)	$ .14	(0)	
Morphine(53)	$ .16	(58)	$ .16
Post-op			
292s(50)	$ .25	(67)	$ .25
Dalmane(38)	$ .07	(0)	
Gravol(53)	$ 1.65	(42)	$ .05
Stemetil(25)	$ 4.10	(58)	$ .80
Dispensing	$ 2.28		$ 1.52
Sub-Total	$ 8.35		$ 2.78
Tests			
CBC(100)	$ 2.08	(0)	
Urinalysis(98)	$ 1.56	(58)	$ 1.56
Serology(100)	$ 5.20	(0)	
SMA 6,12(25)	$ 2.08	(0)	
Electrolytes(25)	$ 1.04	(0)	
Haemoglobin(0)		(92)	$ 1.56
Sub-total	$ 11.96		$ 3.12
Medical Records	$ 29.78		$ 29.78
Operating Room	$102.56		$102.56
Total	$152.65		$138.24

The average length of stay for a D & C patient was 2.9 days. The final procedure cost was, therefore,

	Inpatient	Day Surgery
2.9 x	$117.18= $339.82	$ 97.86
	+ $152.65	+ $138.24
Total	$492.47	$236.10

This became $169.82 per inpatient day. This equates to a 52% savings per procedure for outpatient over inpatient surgery.

TABLE 11

Procedure Cost - Laparoscopy

Cost	Inpatient		Day Surgery
Nursing	$ 55.30		$ 35.11
Supply	$ 5.00		$ 2.98
Laundry	$ 6.00		$ 5.00
Housekeeping	$ 3.50		$ 6.50
Administration	$ 24.43		$ 24.43
Plant	$ 19.34		$ 19.34
Dietary	$ 13.00		$ 4.50
Total	$126.57		$ 97.86
Drugs- Pre-op			
Dalmane(81)	$ .14	(0)	
Morphine(89)	$ .16	(50)	$ .16
Atropine(0)		(25)	$ .15
Post-op			
292s(70)	$ .25	(38)	$ .25
Gravol(67)	$ 1.65	(50)	$ .05
Dalmane(59)	$ .07	(0)	
Stemetil(26)	$ 4.10	(38)	$ .80
Demerol (0)		(38)	$ .65
Dispensing	$ 2.28		$ 2.28
Sub-total	$ 8.65		$ 4.34
Tests			
CBC(100)	$ 2.08	(0)	
Serology(100)	$ 5.02	(0)	
Urinalysis(100)	$ 1.56	(100)	$ 1.56
Haemoglobin(0)		(100)	$ 1.56
Sub-total	$ 16.66		$ 3.12
Medical Records	$ 29.78		$ 29.78
Operating Room	$102.56		$102 56
Total	$157.65		$139.80

The average length of stay for a laparoscopy was 4 days, therefore, the procedure cost was,

	Inpatient	Day Surgery
4 x $126.57=	$506.28	$ 97.86
±	$157.65	± $139.80
Total	$663.93	$237.66

This became $165.98 per inpatient day. This equates to a savings of 64% per procedure for day over inpatient surgery.

The average length of stay for a n.r.i. hernia was 5.5 days. Therefore, the total procedure cost was,

	Inpatient	Day Surgery
5.5 x $119.17=	$401.50	$ 97.86
±	$165.00	± $134.05
Total	$566.50	$231.91

This became $103.00 per inpatient day. This equates to a savings of 59% per procedure for outpatient over inpatient surgery.

The average length of stay for a breast biopsy was 3.4 days. The cost per procedure was, therefore,

	Inpatient	Day Surgery
3.4 x$114.79=	$390.29	$ 97.86
±	$154.73	± $141.58
Total	$545.02	$239.44

TABLE 12

Procedure Cost - Non-Recurrent Inguinal Hernia

Cost	Inpatient		Day Surgery
Nursing	$ 44.84		$ 35.11
Supply	$ 8.06		$ 2.98
Laundry	$ 6.00		$ 5.00
Housekeeping	$ 3.50		$ 6.50
Administration	$ 24.43		$ 24.43
Plant	$ 19.34		$ 19.34
Dietary	$ 13.00		$ 4.50
Total	$119.17		$ 97.86
Drugs- Pre-op			
Dalmane(40)	$ .14	(0)	
Morphine(52)	$ .16	(0)	
Atropine(28)	$ .15	(100)	$ .15
Post-op			
Demerol(68)	$ .65	(0)	
Codeine(44)	$ .48	(0)	
Dispensing	$ 2.28		$ .38
Sub-total	$ 3.23		$ .15
Tests			
CBC(100)	$ 2.08	(0)	
Serology(100)	$ 5.20	(0)	
Urinalysis(100)	$ 1.56	(0)	
SMA 6,12 (56)	$ 2.08	(0)	
Chest x-ray(64)	$ 5.00	(0)	
EKG (56)	$ 12.47	(0)	
Electrolytes(56)	$ 1.04	(0)	
Haemoglobin(0)		(100)	$ 1.56
Sub-total	$ 29.43		$ 1.56
Medical Records	$ 29.78		$ 29.78
Operating Room	$102.56		$102.56
Total	$165.00		$134.05

This became $160.30 per inpatient day. This equates to a 56% savings per procedure for day surgery over inpatient surgery.

TABLE 13

Procedure Cost - Breast Biopsy

Cost	Inpatient		Day Surgery
Nursing	$ 36.95		$ 35.11
Supply	$ 11.57		$ 2.98
Laundry	$ 6.00		$ 5.00
Housekeeping	$ 3.50		$ 6.50
Administration	$ 24.43		$ 24.43
Plant	$ 19.34		$ 19.34
Dietary	$ 13.00		$ 4.50
Total	$114.79		$ 97.86
Drugs- Pre-op			
Dalmane(43)	$ .14	(0)	
Morphine(64)	$ .16	(67)	$ .16
Post-op			
Gravol(93)	$ 1.65	(33)	$ .05
Demerol(86)	$ .65	(33)	$ .65
Codeine(64)	$ .48	(33)	$ .48
Dalmane(36)	$ .07	(0)	
Stemetil(0)		(33)	$ .80
Dispensing	$ 2.28		$ 1.90
Sub-total	$ 5.43		$ 4.04
Tests			
CBC(93)	$ 2.08	(33)	$ 2.08
Serology(100)	$ 5.20	(0)	
SMA 6,12 (93)	$ 2.08	(0)	
Urinalysis(86)	$ 1.56	(67)	$ 1.56
Electrolytes(79)	$ 1.04	(0)	
Chest x-ray(36)	$ 5.00	(0)	
Haemoglobin(0)		(33)	$ 1.56
Sub-total	$ 16.96		$ 5.20
Medical Records	$ 29.78		$ 29.78
Operating Room	$102.56		$102.56
Total	$154.73		$141.58

The average length of stay for a cataract patient was 5.8 days. Therefore, the cost per inpatient procedure was,

5.8 x $108.13= $627.15

+ $187.00

Total $814.15

TABLE 14

Procedure Cost - Cataracts

Cost	Inpatient	Day Surgery
Nursing	$ 34.00	$ 35.11
Supply	$ 7.86	$ 2.98
Laundry	$ 6.00	$ 5.00
Housekeeping	$ 3.50	$ 6.50
Administration	$ 24.43	$ 24.43
Plant	$ 19.37	$ 19.37
Dietary	$ 13.00	$ 4.50
Total	$108.13	$ 97.86
Drugs- Pre-op		
Diamox(78)	$ .54	
Valium(83)	$ .35	
Demerol(78)	$ .65	
Atropine(77)	$ .15	
Chloral Hy(50)	$ .02	
Neosynephrn(42)	$ 3.02	
Mydriacyl(36)	$ 7.74	
Dalmane(28)	$ .14	
Post-op		
Gravol(33)	$ 1.65	
Codeine(92)	$ .48	
Chloromyctn(33)	$ 2.83	
Atropine(78)	$ .15	
Metimyd(50)	$ 3.29	
Stemetil(42)	$ 4.10	
Dispensing	$ 5.32	
Sub-total	$ 30.43	
Tests		
EKG (81)	$ 12.47	
Chest x-ray(81)	$ 5.00	
SMA 6,12 (72)	$ 2.08	
Urinalysis(89)	$ 1.56	
CBC(86)	$ 2.08	
Sub-total	$ 24.23	
Medical Records	$ 29.78	
Operating Room	$102.56	
Total	$187.00	

This became $140.37 per inpatient day.

With a cataract operation, cost comparison assumptions have to be made for day surgery as no cataract operations were done on a day care basis in 1980. The basic costs for day surgery would have remained the same at $97.86. More than likely, only a haemoglobin and a urinalysis test would have been required. The combined cost for these tests was $3.12 plus O.R. costs of $102.56 and a medical records cost of $29.78 for a total of $135.46.

Only with the drug costs could more than one assumption be made. Assuming the drug costs for both inpatients and outpatients had remained the same at $30.43 (including dispensing costs), the day surgery cost would have been $263.75. The savings per procedure would have been 68%. However, in three of the four preceding procedures, the day surgical drug costs were one third or less of the inpatient drug costs. Therefore, making day surgery drug costs a more reasonable 50% of the inpatient drug costs would have led to a day surgery cost of $248.54. This would have meant a savings of 70% per procedure.

The average length of stay for haemorrhoids was 5 days, therefore, the inpatient procedure cost was,

5 x $114.82=	$574.10
+	$171.63
Total	$745.73

This became $149.15 per inpatient day.

TABLE 15

Procedure Cost - Haemorrhoids

Cost	Inpatient	Day Surgery
Nursing	$ 36.95	$ 35.11
Supply	$ 11.57	$ 2.98
Laundry	$ 6.00	$ 5.00
Housekeeping	$ 3.50	$ 6.50
Administration	$ 24.43	$ 24.43
Plant	$ 19.37	$ 19.37
Dietary	$ 13.00	$ 4.50
Total	$114.82	$ 97.86
Drugs- Pre-op		
Morphine(70)	$ .16	
Dalmane(70)	$ .14	
Post-op		
Demerol(90)	$ .65	
Gravol(70)	$ 1.65	
Metamucil(70)	$ .32	
Mineral Oil(60)	$ .18	
Stemetil(40)	$ 4.10	
Dispensing	$ 2.66	
Sub-total	$ 9.86	
Tests		
SMA 6,12 (100)	$ 2.08	
Urinalysis(90)	$ 1.56	
CBC (90)	$ 2.08	
Serology(90)	$ 5.20	
Chest x-ray(50)	$ 5.00	
EKG (40)	$ 12.47	
Electrolytes(40)	$ 1.04	
Sub-total	$ 29.43	
Medical Records	$ 29.78	
Operating Room	$102.56	
Total	$171.63	

The same cost assumptions that were made for Cataract surgery can be made for haemorrhoid day surgery, as none of these procedures were performed on an outpatient basis in 1980 either. The basic and test, O.R. and medical records

costs would have remained the same at $97.86 and $135.46, respectively. If inpatient and outpatient drug costs had remained the same, a day surgery cost of $243.18 would have resulted. This would have resulted in a 67% savings per procedure. Reducing the day surgery drug cost by 50% would have led to a 68 % savings per procedure for day surgery over inpatient surgery.

The study would not be complete, before proceeding on to the final sections, if it did not include the arbitrary hospital per diem rate and how it is figured. The information used to derive this figure comes from the 1980-81 Annual Return of Health Care Facilities - Hospitals, Part One.

The total operating expense of the University of Alberta Hospital for 1980-81 was $102,424,959 (Pg 12 No 10). This operating expense includes many areas that would not normally be included in a patient per diem rate. Consequently, these expenses are subtracted from the total expense. The calculations involved in deriving the per diem rate are summarized in Table 16.

The total number of patient days in 1980-81 was 311,370. If everything was included in the per diem rate, then the per diem rate for 1980-81 was $328.94 ($102,424,959 / 311,370). If they were not included, then the per diem rate was $277.69 ($86,464,986 / 311,370).

TABLE 16

Arbitrary Hospital Per Diem Rate

Total Operating Expenses	(Pg 12 No 10)	$102,424,959
Clinic Expenses	(Pg 10 No 1-4)	$ 4,063,164
Sub-total		$ 98,361,795
Depreciation of Loan	(Pg 11 No 20)	$ 60,734
Commissioning-HSC	(Pg 11 No 21)	$ 510,996
Public School	(Pg 11 No 22)	$ 8,735
Educational Programs	(Pg 11 No 7)	$ 9,316,532
Special Research	(Pg 12 No 4)	$ 1,975,880
Staff Education Pgms	(Pg 12 No 5)	$ 23,932
Total		$ 86,464,986

The first per diem rate above is the standard hospital per diem rate. The second rate has been included for the purposes of a better comparison with the procedure costs.

It should be noted that the hospital per diem rate is flawed in that it makes no distinction between medical or surgical patients or between short term units e.g., obstetrics and long term units e.g., rehabilitation medicine. It is just the simple division of the total operating expenses by the total number of patient days.

The hospital per diem rate is presented as an example of what not to use when calculating procedure costs. Not only is it arbitrary, but in this case it is almost twice as great as the largest per diem rate of the six procedures presented in this study (as derived from the procedure cost

divided by the average length of stay), that being $169.82 per diem for a D & C.

It is obvious from the information presented thus far that the potential savings from a greater substitution of outpatient for inpatient surgery could have been great. Within the six procedures presented above, the savings would have ranged from 52 to 70% per procedure. Multiplying these savings by the total number of inpatient procedures done in 1980 would have yielded a significant savings. However, it would be very naive to think that all the inpatient procedures could have been done on a day care basis. The rest of this chapter is devoted to attempting to derive a percentage of inpatient procedures that could have been done in day surgery taking into account the restrictions on a potential day surgery patient.

5.1 COST SAVINGS

The restrictions that preclude 100% substitution of day for inpatient surgery are, as mentioned earlier in this study, pre- or post-operative complications, age over 65 and living further than 180 km from the hospital.

For each procedure, the overlap of people into more than one of the above categories was eliminated so that they would not be counted twice. Once these numbers were totalled, the result was a percentage of the number of cases studied that could not be done on a day care basis.

Each procedure with the corresponding percentage of day surgery ineligibles and how these figures were derived, is outlined on the following pages.

Dilatation and Curettage

In the 40 cases studied, there were 2 people over 65(2%), 3 with pre-op complications (7.5%) and 2 that lived over 180 km away (5%). This means that 7 of the 40 patients studied would have been ineligible for day surgery however, one of the over 65 patients was one of the patients who lived over 180 km away, therefore, 6 of 40 were ineligible. This results in a 15% ineligibility rate which means that up to 85% of the D & Cs studied could have been done in day surgery.

Laparoscopy

Of the 28 cases studied, 1 was over 65(3.7%), 7 had pre-op complications (26%) and 8 lived too far away (30%) for a total of 16 of 28 or 57%. There was alot of overlap present. The one patient over 65 was admitted with complications as were 3 of the patients who lived over 180 km away. This then reduces the number of ineligibles from 16 to 12 of 28. The ineligibility rate was 43%, meaning up to 57% of the total number of laparoscopies could have been done in day surgery.

Non-Recurrent Inguinal Hernia

Of the 25 cases studied, 7 patients were over 65(28%), 6 had pre-op complications (24%), 1 developed post-op complications (4%) and 7 patients lived further than 180 km away (28%). This totals to 21 of 25 or 84%. However, of the 6 people with pre-op complications, 4 were over 65, the 1 post-op complication was over 65 and 3 of the 7 people who lived over 180 km away were over 65. As well, the 1 post-op complication and 1 patient with pre-op complications lived further than 180 km away. This reduces the number of ineligibles from 21 to 15 of 25 or 60%. The ineligibility rate was, therefore, 60%, which means that up to 40% could have been done in day surgery.

Breast Biopsy

Of the 14 cases studied, no patients were over 65, 2 patients had pre-op complications (14%), 2 were admitted after surgery for possible mastectomies (14%) and no patient lived further than 180 km away. There was no overlapping, therefore, the ineligibility rate was 29% which means that up to 71% could have been done in day surgery.

Cataracts

Of the 36 cases studied, 22 patients were over 65(61%), 8 patients had pre-op complications (22%), 1 had post-op complications (3%) and 6 patients lived further than 180 km

away (17%). Five of the 7 with pre-op complications and 5 of the 6 people living further than 180 km away were over 65. The number of ineligibles remains at 22. The ineligibility rate was, therefore, 61% which means that up to 49% could have been done in day surgery.

Haemorrhoids

Of the 10 cases studied, there was 1 patient over 65, 2 with pre-op complications and 1 who lived further than 180 km away. One of the 2 patients with pre-op complications was over 65 which results in an ineligibility rate of 10% meaning up to 90% could have been done on a day care basis.

When the ineligibility rates, or the converse eligibilty rates, for each procedure had been established, the possible cost savings for these six procedures, based on 1980 data, were computed. It involved multiplying the eligibility rate by the total number of cases in 1980 for that particular procedure. This, in turn, was multiplied by the procedure cost for inpatient surgery. The resulting day surgery procedure cost was subtracted from the inpatient cost to give the total possible savings.

Dilatation and Curettage

The eligibility rate for D & C was 85%, the cost per inpatient procedure was $492.47 and the cost per day surgical procedure was $236.10. In 1980, 396 inpatient D & Cs were

done. The resultant savings, if 85% of the D & Cs had been done in day surgery, would have been,

(.85 x 396) = 337 procedures. 337 x 492.47 = $165,962.39

337 x 236.10 = $ 79,565.70

Potential Savings $ 86,396.69.

This would have been a 52% savings.

Laparoscopy

The eligibility rate for laparoscopies was 57%, the inpatient procedure cost was $663.93 and the day surgical procedure cost was $237.66. In 1980, 270 inpatient laparoscopies were done. The resultant savings, if 57% of inpatient laparoscopies had been done in day surgery, would have been,

(.57 x 270) = 154 procedures. 154 x 663.93 = $102,245.22

154 x 237.66 = $ 36,873.76

Potential Savings $ 65,645.58.

This would have been a 64% savings.

Non-Recurrent Inguinal Hernia

The eligibility rate for hernias was 40%, the inpatient procedure cost was $566.50 and the day surgery procedure cost was $231.91. In 1980, 254 non-recurrent inguinal hernia operations were done on an inpatient basis. The resultant savings, if 40% of all the hernia operations had been done in day surgery, would have been,

(.4 x 254) = 102 procedures. 102 x 566.50 = $57,783.00

102 x 231.91 = $23,654.82

Potential Savings $34,128.18.

This would have been a 59% savings.

Breast Biopsy

The eligibility rate for breast biopsies was 71%, the inpatient procedure cost was $545.02, the day surgery procedure cost was $239.44 and in 1980, 137 breast biopsies were done on an inpatient basis. The resultant savings, if 71% of the breast biopsies had been done in day surgery, would have been,

(.71 x 137) = 97 procedures. 97 x 545.02 = $52,866.94

97 x 239.44 = $23,255.68

Potential Savings $29,641.26.

This would have been a 56% savings.

Cataracts

The eligibility rate for cataracts was 48%, the inpatient procedure cost was $814.15, the day surgery procedure cost was $248.54 and in 1980, 350 cataract operations were performed on an inpatient basis. The resultant savings, if 41% of the cataract operations had been done on a day surgical basis, would have been,

(.41 x 350) = 144 procedures. 144 x 814.15 = $117,237.60

168 x 248.54 = $ 35,789.76

Potential Savings $ 81,447.84.

The resultant savings would have been 70%.

Haemorrhoids

The eligibility rate for haemorrhoids was 90%, the inpatient procedure cost was $745.73, the day surgical procedure cost was $238.25 and in 1980, 90 procedures were done on an inpatient basis. The resultant savings, if 90% of all haemorrhoid operations had been done in day surgery, would have been,

(.90 x 90) = 81 procedures. 81 x $745.73 = $60,404.13

81 x $238.25 = $19,298.25

Potential Savings $41,105.88.

The resultant savings would have been 68%.

Total potential savings for the six procedures would have been,

Total inpatient procedure costs = $556,499.28

Total outpatient procedure costs= $218,133.85

Total Potential Savings $338,365.43.

This would have been a 61% savings.

Chapter VI

DISCUSSION AND CONCLUSIONS

It is obvious from the data presented in this study that the potential savings from the substitution of day surgery for inpatient surgery are great. While these savings constitute only 0.3% of the 1980 operating expenses, it should be realized that this study only examines the potential savings associated with six procedures. There are presently approximately 60 approved day surgical procedures in seven different divisions of medicine at the U.A.H. Considering that over 17,000 inpatient operations were performed in 1980,[6°] if even 30% of these procedures (5,610 cases) had been done in day surgery, the savings would have been extremely large. At a low estimate of $500.00 per inpatient procedure and a high estimate of $275.00 for a day surgical procedure, the savings would have been greater than $1,260,000. This would have been over 1% of the 1980 operating expenses.

It should be realized, as well, that substituting day surgery for inpatient surgery would lead to a ripple effect in terms of savings. Since it has been estimated that closing four beds on any U.A.H. ward would reduce nursing requirements by one R.N., the statistics presented above would

[6°] U.A.H. Dept of Surgery Annual Report, 1980.

have resulted in a nurse staff reduction of 855 nursing shifts over the course of the year. This translates to 285 nurses over the course of the year. At a salary of $1,872.00 per month, the savings would have been $1,872.00 x 12 months x 285 nurses = $6,402,240. Add to this the reduced number of meals, less housekeeping personnel, especially at night, and reduced laundry and linen costs and the total savings are a substantial part of the operating expenses.

The key to this whole study lies in the phrase 'if the beds were closed'. Only the direct substitution of day surgery for inpatient surgery will result in savings. If the beds are not closed two possible results could occur. Either the beds would be filled with more severe cases or the beds would be filled with unnecessary cases. This study is not in the position to argue which of the two results would be more likely to occur, however, the one result that would definitely occur would be increased costs. In these circumstances the costs for day surgery would simply be added on to the present operating expenses of the hospital.

This study is especially relevant at the present time given the fact that budgets are being cut back or increased only marginally resulting in the closing of beds to try and better meet the budget. This has happened at the Jewish General Hospital in Montreal where 50 beds have been closed

to try to meet the budget and in Alberta, where the Provincial Government is only approving 854 beds at the new Health Sciences Centre instead of the 999 beds presently approved at the U.A.H. As well, there is a large shortage of nursing staff in Canada and the U.S. Day surgery is an alternative to cutting programs to meet these greater restrictions being put on the hospitals.

6.1 STRENGTHS AND WEAKNESSES

Every study has its strengths and weaknesses and this study is no exception.

One weakness in this study has to do with the data. The severity of the weakness however, is in the eyes of the reader. It is extremely difficult to come up with precise data for all the costs examined. Derivation of some of these costs required determination and ingenuity. However, different readers may have completely different perceptions of what data should have been examined to come up with a cost per procedure. The data and costs studied here, are the data and costs the author perceived as being important and necessary in any study of this nature.

Some of the costs presented in this study have a flaw which should be mentioned here. This flaw is over estimation and is relevant to the costs per patient and per patient day that were derived by dividing the total operating

cost of the particular department by the total number of patient days. It should be recognized that these operating costs include costs which were not directly involved in services to inpatients or day surgery patients. Examples include costs from administration, plant and medical records that had not been apportioned to outpatients or emergency patients who were not admitted. Another example is the operating room costs. Costs per patient were derived by dividing the operating budget by the total number of procedures, yet time, which is a very important factor, was not taken into account. The cost per patient here assumes that all procedures take the same amount of time and that the O.R.s operate 100% of the time. These assumptions are such because it is difficult to isolate time and to get more precise costs but it should be recognized that these assumptions are partly incorrect. By neglecting the apportionable costs, the cost per patient or per patient day becomes inflated which results in the procedure cost becoming inflated.

This leads to two other potential weaknesses. The first deals with the fact that this study only examines short or intermediate run cost savings. While it may be argued that the study should have examined long term savings, it should be realized that the potential savings in the long run would, at this point, be purely speculative. Projecting increased costs of supplies, equipment, staff salaries, capi-

tal expenditures and future budgets would be a difficult, if not impossible, task. This study examines potential savings based on 1980 dollars with much of the data, such as the 1980 operating expenses, presently available. In a long term study everything, including capital expenses, would be variable. One result may be the rearranging of the physical facilities. The effects of something as complex as the rearranging of the physical facilities, are difficult to predict. It is no use predicting future long range savings, when the changing patterns of health care delivery may invalidate the data or the results.

The other potential weakness is the lack of calculation of the social costs and benefits of day surgery. These were not examined for two reasons. Firstly, unlike the U.S., there are next to no out of pocket costs for the consumer of health care in Canada. The Canadian social costs involve travel and time lost from work. It should be intuitively obvious that a reduced length of stay in the hospital would reduce these costs. Secondly, this study examines potential savings to the hospital and not to the patient, therefore, social costs were not examined.

A medical limitation of this study that has to be considered, is the fact that some patients may not have been suitable for day surgery due to their mental condition. Day surgery requires that a patient be in a positive frame of

mind. If the patient exhibits any anxiety or is dead set against day surgery, it is advisable that the patient have the procedure done on an inpatient basis. The information about the patient's mental attitude towards day surgery would probably not be evident in a medical record. Therefore, the percentage of patients eligible for day surgery, i.e. the eligibility rate, may be exaggerated due to this fact.

There is also a form of medical limitation on the data itself. Since, in the case of four of the six procedures selected, less than 15 total procedures were performed in 1980, the total population to chose from was small. As well, since only a representative sample was required, the sample size became even smaller. What should be noted here is that the percentages associated with these small sample sizes can be deceiving and this should be taken into account when examining the data.

The strength of this study is its uncomplicated nature and its ease of understanding. It is spelled out clearly that the cost savings could be great if a greater substitution of day for inpatient surgery were to occur and it is spelled out in a logical step by step formula. This results in a relative ease of reproducing this study with different procedures at different times. A minimum amount of digging is required to come up with potential savings for any proce-

dure a physician or administrator wishes to examine. To replicate this study the first time, basic information is needed from only five departments. The Hospital Services Department can provide the data on laundry, dietary and housekeeping costs. The lab and radiology costs can be obtained from the lab and radiology departments. Drug costs can be obtained from the Pharmacy. Nursing and supply costs can be obtained from the Nursing Department and medical records can be obtained from the Medical Records Department. Providing all the yearly information is obtained for the first study, subsequent studies, in the same year, require only a visit to the Medical Records Department. It is a very easy model to follow and should result in a fairly accurate estimate of potential savings.

6.2 CONCLUSIONS

One major weakness that should be mentioned, is the weakness of the Canadian health system.

The present method of financing hospitals results in little or no incentive for either the hospitals or the patients to change their habits. The global budgeting system, where the hospital usually receives its last years budget plus a little more to offset inflation, results in a stagnant system. Hospital costs are really the cost per patient or per diem rate multiplied by the number of patients. These hospital costs are, or should be, equal to the hospital sales.

Hospital sales are the average income per employee multiplied by the number of employees plus the supplies, drugs, food and anything else needed in a hospital.[61] Since hospital costs are supposed to equal sales, cutting costs must result in a reduction of sales.

A decrease in supplies used would account for only a small percentage decrease in total sales. The rest must come from either reduced pay or reduced staffing. It has already been shown what reduced staffing e.g., R.N.s, would mean to the hospital in terms of savings but it can be guaranteed that a staff reduction would not be an easy task to accomplish, especially given the unions.

What this means is that there is a disincentive among hospital employees to reduce costs because reduced costs lead to reduced numbers of staff. From the administrator's point of view, reduced costs from increased day surgery means saving the provincial government's money but staff cuts would not make him or her very popular. For physicians, the incentives are the same whether a patient is admitted to the hospital as an inpatient or a day surgical patient. Lastly, the patient, since almost all his hospital bills are paid by the Medicare system, has no incentive, either. There is no extra cost to the patient, i.e. out of pocket, whether the

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[61] Evans,R. & Robinson,G., "Surgical Day Care: Measurement Of The Economic Payoff" in CMA Journal, Nov. 8, 1980, pg 879.

patient stays in the hospital one day or one week. With the patient's sick leave benefits from work, it may even pay for him or her to be in the hospital longer.

How does one resolve a situation where the only group that has has a real incentive to reduce hospital costs is the Provincial Government? One way is to possibly have incentives for the hospital to increase the volume of procedures done in day surgery. However, does a community really need more surgery? Or would more unnecessary surgery be done just to maintain cost levels?

There is no real answer to any of these questions. Evans suggests possibly shifting incentive so that every hospital in the region, except the one increasing its day surgery, would have to reduce its number of inpatient beds.[62] This would create inter-hospital, intra-region rivalry to increase day surgery and would, in effect, be forcing bed restrictions. Even Evans in a 1980 article, realizes this solution has its flaws.

This study recognizes the fact that day surgery should be the direction of the future both medically and economically, and with the proposed model and examples from the U.A.H. provided, is meant to spark the interest of pursuing a more intensified effort in this direction. However, unless some incentives are created to replace inpatient surgery by day

[62] Ibid, pg 880.

surgery and to close the beds, the economic aspect of day surgery will fall far short of its promise.

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Appendix A

POSSIBLE DAY SURGERY PROCEDURES

The following pages contain a sample of day surgery procedures that are presently being done in two hospitals as well as, two other opinions of possible day surgery procedures. The four sections are:

a) Present procedures at the University of Alberta Hospital,

b) Present procedures at the Ottawa Civic Hospital,

c) Possible procedures as suggested by the Working Group on Special Services in Hospitals,

d) Possible procedures as suggested by T.R. O'Donovan.

PROCEDURES AT U.A.H

GENERAL SURGERY

EXCISIONS OF BREAST TUMOURS

GANGLIONECTOMY

HAEMORRHOIDECTOMY

FISTULECTOMY

ANAL FISSURE

RECTAL POLYP

FRENULECTOMY OF TONGUE

HERNIORRAPHY

LAPAROSCOPY

REMOVAL OF FOREIGN BODY

EXCISION OF SUBCUTANEOUS TUMOURS

MUSCLE BIOPSY

LYMPHNODE BIOPSY

PILONIDAL CYST

EXCISION OF SKIN LESIONS

THYROGLOSSAL CYST

VARICOSE VEIN [illegible]

DENTAL SURGERY

EXTRACTIONS OF TEETH

REMOVAL OF IMPACTED TEETH

REMOVAL OF SUPER-NUMERY

BIOPSY

EXCISION OF SMALL CYSTS AND BENIGN TUMORS

I & D (INCISION AND DRAINAGE)

COMPREHENSIVE DENTAL CARE ON RETARDED PATIENTS

COMPREHENSIVE DENTAL CARE ON APPREHENSIVE PATIENTS

FRACTURE WIRING

OTHER MINOR SURGICAL PROCEDURES

OPTALMOLOGY

Majority of procedures can be done under General or Local Anaesthesia depending on circumstances.

1. EXAMINATION UNDER ANAESTHESIA with or without special tests

   a. Cornea
   b. Glaucoma
   c. Retina

2. LID PROCEDURES - nearly all including current " Major"

   - Xanthoma
   - Tarsorraphy
   - En-Ectropion Repair
   - Lid Tumours - Chalazia etc. etc.

3. LACRIMAL PROCEDURES - naso lacrimal probing
   possible insertion of sialistic tubes

4. CORNEO - scleral
   pterygium
   dermoids etc.
   need corneal instruments in difficult cases
   removal of scleral buckle (retinal setup)

5. GLAUCOMA procedures

   - Needling
   - Trabeculectomy or trabeculotomy " laser " operations
   - Cryotherapy (see equipment retinal list)

6. CATARACT

   After cataract procedures, needling (laser needling equipment)

NB Cataract requires following instruments in addition to operating microscope with X-Y translator facilities

   Phako Fragentator ($ 60,000)
   Vitreous Aspirator ($ 35,000)
   Laser ($ 30,000 - 60,000)

7. STRABISMUS - virtually all types

8. RETINA, CILIARYBODY, VITREOUS - special instruments required

   Laser ($30,000 - 60,000) retinal gryotherapy machine ($35,000 or less)
   Vitrectomy (Ocutome $35,000)

9. ORBIT (Uncommon) Removal of benign ant. orbital tumours only

CARDIO VASCULAR SURGERY

CHANGE OF PACE MAKER BATTERY

GYNECOLOGICAL SURGERY

BARTHOLIN CYST REMOVAL

CRYOSURGERY OF CERVIX

DILATATION AND CURETTAGE

EXCISIONS - CERVICAL POLYPS

- LESIONS OF VAGINA

- VAGINAL SEPTUM

- VULVA & PERINEUM

LAPAROSCOPY

TUBAL LIGATION

THERAPEUTIC ABORTION

- ASPIRATION CURETTAGE

(less than 12 weeks)

ORTHOPAEDIC SURGERY

Carpal Tunnel Decompression

Closed Reduction

Finger nail or Toe nail Removal

Joint Manipulation

Removal of Internal Fixation Devices

Tendon Repair

Tendon Release

Minor amputations

Nerve releases (carpal tunnel, ulnar, digital)

Dislocations

Foot-Bunionectomy
- -plantar lasciotomy
- -hammer toes repair
- -Morton's neuroma
- -amputation of toe or finger
- -sesamoidectomy
- -metatarsal osteotomies
- -Hoffman procedure
- -Bursectomy

Suitable fracture treatment

Ganglion excision

Appropriate bone biopsy

Soft tissue excisions and biopsy

Arthroscopy

Retinacular releases

Excision outer end of clavicle

Partial Dupuytren's excision

Change of cast

Exostosectomy

Menisectomy

OTORHINO LARYNGOLOGICAL SURGERY

DIRECT LARYNGOSCOPY

ESOPHAGEAL DILATATION

PRE AURICULAR CYST

MYRINGOTOMY

TYMPANOPLASTY

TONSILLECTOMY AND ADENOIDECTOMY

MOST NASAL PROCEDURES INCLUDING

ANTRAL PUNCTURE

RHINOPLASTY

SUBMUCUSRESECTION

SEPTAL RECONSTRUCTION

POLYPECTOMY

TURBINECTOMY

PLASTIC SURGERY

HAND SURGERY

Tendon nerve repair, minor amputations, carpal tunnel release, ganglionectomy, arthroplasty, silastic implants etc.

SURGERY INVOLVING SKIN AND SUBCUTANEOUS TISSUE

- Scar Revision
- Removal of benign and maligant skin and soft tissue tumours
- Skin grafting procedures (either full thickness or split thickness)
- Removal of Axilliary Sweat Glands

BREAST SURGERY

- Silastic breast augmentation; uni or bilateral
- Minor breast reduction
- Mastopexy procedures where primarily skin is removed
- Gynecomastia

COSMETIC PROCEDURES

- Otoplasty
- Rhinoplasty, submucous resection
- Face Lifts
- Blepharoplasty

FACIAL FRACTURES

- Fractured noses
- Fractured Malars
- Wiring of teeth for minor fractures of the mandible

MINOR ORAL SURGERY

PROSTHETIC IMPLANT, CHIN, NOSE, MALAR

DERMABRASION

UROLOGICAL PROCEDURES

DAY SURGERY

Circumcision
Needle biopsy of prostate
Testicular biopsy
Orchidopexy
Orchidectomy
Vasectomy
Vas Reanastomosis
Spermatocoelectomy
Varicocoelectory
Biopsy of penis

CYSTOSCOPY

Cysto
Ureth. Dil.
Meatotomy & Panendoscopy

A - GENERAL SURGERY

Surgical Day Care Service
Ottawa Civic Hospital

OPERATIVE PROCEDURE

- Release of Tennis Elbow
- Tendinoplasty
- Excision granuloma wound
- Revision of scar tissue
- Excision of naevus
- Excision of mole (various)
- Excision Keloid tissue
- Breast Biopsies with or without quick section
- Removal Rectal Lesion
- Anal dilatation (Lord's procedure)
- Anal sphincterotomy
- Excision rectal polyp with sigmoidoscope with or without snare
- Excision peri-anal codylomata
- Excision ectopic mammary tissue
- Simple mastectomy
- Removal or resection of gland
- Excision sinus
- Removal of sutures
- Ligation aneurysm
- Artery biopsy
- Excision haemangioma
- Curettage plantar wart
- Excision bursa
- Fusion of a joint
- Removal of screw
- Diagnostic Dilatation and Curettage
- Frenulum Release
- Excision papilloma
- Removal screw nail
- Excision of skin and subcutaneous tumours
- Excision of Sebaceous Cyst
- Biopsy of skin, muscle, nerve, fat, mucous membrane and superficial lumph nodes
- Removal of skin lesion
- Fulguration of warts

A - GENERAL SURGERY

OPERATIVE PROCEDURE

- Removal of foreign bodies
- Removal of toe nails, either infected or not
- Excision of ganglions
- Minor amputations
- Chronic Tenosynovitis repair
- I & D hematomas
- I & D abscesses
- Aspiration of bursa
- Ligation of varicose veins
- Salivary glands - selected
  - exploration of ducts
  - removal of stones from ducts
  - resection of submandibular and sublingual glands
- Excision of intra oral tumours - selected
- Electrofulguration of leukoplakia
- Excision of thyroglossal cyst
- Drainage of Perianal Abscesses
- Biopsy of anal lesion
- Hernia, selected inguinal
- Excision haemorrhoid tag

B - GYNAECOLOGY

OPERATIVE PROCEDURE

- Hymenectomy
- Hymenotomy
- D & C Diagnostic
- Diagnostic D & C polypectomy
- Diagnostic D & C with cone biopsy
- D & C Laparoscopic Tubal Sterilization with or without Falope Ring
- D & C Therapeutic with Berkley
- Biopsies - vulva, cervix, breast
- Bartholin Cysts - Excision / marsupialization
- Abscesses - I & D
- Removal / Insertion IUD
- Excision vaginal adhesions
- Dissection condylomata vulvae
- Cautery Cervix
- Release episiotomy seal
- Periniotomy
- Vaginal Dilatation
- Excision urethral caruncle
- Excision labial flap
- Colpotomy

OPERATIVE PROCEDURE

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a) Hand Surgery - NOTE: For type of Surgery check with O.R. Booking Clerk

Eg. Tendon nerve repair, minor amputations, carpal tunnel release, ganglionectomy, arthroplasty, silastic implants etc.

b) Surgery involving skin and subcutaneous tissue

- Scar Revision
- Removal of benign and malignant skin and soft tissue tumours
- Skin grafting procedures (either full thickness or split thickness)
- Removal of Axilliary Sweat Glands

c) Breast Surgery

- Silastic breast augmentation; uni or bilateral
- Minor breast reduction
- Mastopexy procedures where primarily skin is removed and Gynecomastia

d) Cosmetic Procedures

- Otoplasty
- Phinoplasty, submucous resection
- Face Lifts
- Blepharoplasty

e) Facial Fractures

- Fractured noses
- Fractured Malars
- Wiring of teeth for minor fractures of the mandible

f) Minor Oral Surgery

g) Prosthetic implant, chin, nose, malar

h) Dermabrasion

i) Testicular Implant

j) Penile Implant

D - DENTAL

OPERATIVE PROCEDURE

- Teeth Extrations
- Excision maxillary cyst
- Alveoplasty
- Alveolectomy
- Repair radical antrectomy (prosthesis implant)
- Excision of odontoma
- Orthodontic procedures

E - ORTHOPAEDICS

OPERATIVE PROCEDURE

- Repair Hammer Toe
- Metatarsal Osteotomy
- Removal hardware - intramedullary rods
  - plates
  - screws, nails, wires
- Removal boney exostosis - general
- Soft Tissue Tumours - excision and repair
- Other operations on muscle, tendon, fascia, bursa, nerve
- Phalangectomy
- Kellar procedure unilateral
- Ganglions
- Synovectomy
- Arthrotomy
- Loose bodies in all joints
- Arthroscopy, Arthroscopy with patellar shaver, with menisectomy
- Debridement Toe
- Manipulation of Joint
- Closed reduction of Fractures
- Epidural Steroid Injections
- Stellate block
- Facet injection lumbar spine with image intensifier

F - NEUROSURGERY

OPERATIVE PROCEDURES

- Insertion Carbon Button
- Ulnar Nerve Transplant
- Carpal Tunnel Syndrome
- Angiography
- Cranioplasty
- Percutaneous Cordotomy with or without image intensifier
- Occipital Neurectomy
- Myelogram
- Lumbar Peripheral Block
- Gasserian Coagulation with X-Ray Control

G - GENERAL ANAESTHESIA

OPERATIVE PROCEDURE

- Epidural Steroid Injection
- Stellate Block

H - OPTHALMOLOGY

OPERATIVE PROCEDURE

- Xanthelasma of eye
- Tarsorrhaphy
- Entropion repair
- Removal of scleral buckle
- Excision tumour eyelid
- EUA eye
- Removal papilloma
- Excision chalazion
- Pterygium
- Dilatation lacrimal punctum trabeculectomy
- Excision granuloma
- Squint
- Repair eyelid
- Glaucoma Needling

- Mostly done under local with or without pre-medication. As most of these patients are elder, recovery time is 3-4 hours

I - E.N.T.

- EUA ear
- Polypectomy
- Removal of Lesion
- Debridement of ear
- Bronchoscopy
- Biopsy Scarlene node
- Myringotomy

J - UROLOGY

OPERATIVE PROCEDURE

- Cysto and Internal Urethrotomy
- Cysto and Meatoplasty
- Cysto and Dilatation
- Cysto and Coagulation bladder tumour
- Revision of Circumcision
- Biopsy of bladder
- Biopsy of prostate/testes
- Excision gynaecomastia
- Hydrocoelectomy
- Aspiration of hydrocoelectomy
- Fenueorrhaphy
- Excision scrotal cyst
- Panendoscopy
- Urethroscopy
- Vasography (unilateral and/or bilateral)
- Vasectomy
- Excision caruncle
- Excision urethral polyps
- Excision condylomata
- Coagulation penile warts, tumours, ulcer
- Hysterosalpingogram

Appendix Ac

Possible Out-Patient Surgical, Medical and Diagnostic Procedures

The following list of procedures are those that have been performed on a day surgery basis. The performance of any of these procedures in a day surgery unit is always dependant on the facility, resources and staff (medical and nursing) available, and also on the limiting factors outlined earlier in this study. There may be duplications in this list under various specialties.

General Surgery, Chest Surgery

- Abscess, incision and drainage
- Baker's cyst, excision
- Breast masses, excision
- Bronchoscopy
- Carbuncle, excision
- Cervical node biopsy
- Colonoscopy
- Colostomy revision
- Debridements
- Fistulectomy
- Foreign body removal (with or without x-ray)
- Frenulectomy, tongue
- Gastroscopy
- Haemorrhoidectomy
- Haemorrhoidectomy, thrombotic
- Herniorrhaphy, inguinal
- Herniorrhaphy, umbilical
- Laparoscopy
- Lipoma, excision
- Lymph node biopsy
- Mediastinoscopy
- Muscle biopsy
- Orchidectomy
- Orchidopexy
- Pilonidal cystectomy
- Polypectomy, rectal
- Rectal biopsy
- Scalene node biopsy
- Skin lesions, excision
- Thyroglossal duct cyst
- Varicocelectomy
- Varicose vein ligation
- Varicotomy

Gynaecology

- Abortion, therapeutic
- Bartholin cystectomy

Cervical amputation
Cervical cone
Cautery vaginal cyst
Colpotomy, diagnostic
Condylomata Acuminata (treatment of)
Cryotherapy (alone)
Cryotherapy with biopsy
Culdocentesis
Culdoscopy
Dilatation and curettage
Episiotomy
Excision adhesions of clitoris
Examination under anaesthesia
Hymenotomy
Hysteroscopy
Hysterosalpingogram
Intrauterine contraceptive device, removal
Laparoscopy
Perineorrhaphy
Polypectomy, cervical
Saline injection intrauterine therapeutic
Tubal coagulation or ligation
Vulva biopsy

Oral Surgery

Cystectomy
Fracture, closed reduction, uncomplicated
Odontectomy, uncomplicated
Odontectomy, surgical
Periodontic surgery (full or partial)

Opthamology

Aspiration of aqueous
Biopsy, conjunctiva or cornea
Cataract by phakoemulsification
Canthus excision
Curettage or cauterization of corneal ulcer
Chalazion
Cryoretinopexy
Cryotherapy
Discission
Ectropion or entropion
Enucleation
Hordeolum, incision and curettage
Iridectomy
Keratotomy
Lacrimal duct probing or reconstruction
Myotomy--recession or resection
Photocoagulation
Pterygium
Strabotomy, paediatric
Tarsorrhaphy
Therapeutic retrobulbar injections

Orthopedic and Neurosurgical

Arthrotomy, meniscectomy
Arthrodesis (phalanges, other joints)
Arthroplasty (phalanges, other joints)
Arthroscopy
Bone graft
Bone reconstruction
Bunion operation
Bursae, removal of (olecranon)
Capsulectomy
Carpal tunnel decompression
Carpal tunnel ligament release
Cast change with manipulation
Exostosis, excision
Fasciectomy (finger, palm)
Fingernail or toenail removal
Fracture, closed reduction (with or without x-ray)
Ganglionectomy
Hammertoes with tenotomies and resection of bones
Hardware, removal
Hardware, removal, hip
Injection of intervertebral disc
Intercostal neurectomy
Manipulation of joints (with or without x-ray)
Medial ligament, knee repair of
Metatarsal heads, excision
Morton's neuroma
Nerve repair
Neuroma (other)
Olecranon spur, excision
Phalangectomy
Plantar wart excision
Tendon repair
Tenosynovectomy
Tenotomy, hand or foot
Trigger finger release
Torticollis repair
Ulnar repair transfer

Otolaryngology

Adenoidectomy and myringotomy
Antral puncture
Arch bars, removal or application
Branchial arch appendages, excision
Bronchoscopy
Cytoscopy
Esophagoscopy
Ethmoidectomy
Excision, foreign bodies
Excision, lesions, skin tags, cysts
Excision, parotid and submaxillary stones
Haemangioma, nostril
Inferior turbinate fracture
Jaw, wiring of
Laryngoscopy

Laryngeal polypectomy
Limited rhinoplasty
Mastoidectomy
Myringoplasty
Myringotomy with or without tubes
Nasal polyp, removal
Nose, closed fracture reduction
Otoscopy
Pedicle flap transfer
Polypectomy, nasal
Septal reconstruction
Stapedectomy
Sub-mucous resection
Tonsillectomy, with or without adenoidectomy
Tympanoplasty
Zygoma, reduction

Plastic Surgery

Basal cell, carcinoma, excision
Blepharoplasty (upper, lower or combined)
Cyst excision
Cleft lip repair
Dermabrasion (partial or full)
Gynecomastia, excision
Hair transplantation
Mammoplasty, augmentation or revision
Meloplasty
Otoplasty
Rhinoplasty
Rhytidoplasty
Scar revisions and relaxations
Skin grafts, minor
Skin lesions, excision, minor
Xanthoma, excision

Urology

Caruncle, excision
Circumcision
Cystectomy, Skene's Duct
Cystoscopy
Dorsal slit
Fulguration of bladder neck
Hydrocelectomy
Inguinal/Scrotal abscess, incision and drainage
Lithoplaxy
Meatotomy
Prostate biopsy
Retrograde studies (i.e. Pyelograms)
Testes, excision
Urethral dilation
Urethroscopy
Vasectomy
Vasograms

Medical and Diagnostic Procedures

Bone marrow aspiration and/or biopsy
Cardioversion
Colonoscopy
Electroshock therapy
Esophogeal dilatation
Gastroscopy
Laparoscopy
Liver biopsy
Myelogram
Paracentesis
Proctosigmoidoscopy
Renal biopsy
Spinal tap

Appendix Ad

Common Operative Procedures in Ambulatory Surgery

Abscess, incision and drainage
Adenoidectomy and myringotomy
Adhesions of clitoris
Anaesthesia-local,regional, spinal
Arch bars, removal or application
Arthrodesis (phalanges)
Arthroplasty (phalanges)
Arthroscopy
Arthrotomy, meniscectomy
Aspiration of aqueous
Augmentation mammoplasty

Bartholin cystectomy
Basal cell cancer, excision
Benign intraoral lesions
Biopsy, conjunctiva or cornea
Biopsy, vulva
Blepharoplasty
Bone graft
Bone marrow biopsy
Bone reconstruction
Branchial arch appendages,excision
Branchial clefts
Breast implant, removal
Breast masses, excision
Bronchoscopy
Bunion operation
Bursae, removal of

Canthus excision
Capsulectomy
Carbuncle, excision
Cardioversion
Carpal tunnel decompression
Carpal tunnel ligament release
Cast change with manipulation
Cataract by phakoemulsification
Caudal anaesthesia
Cautery, vaginal cyst
Celiac anaesthetic block
Cervical amputation
Cervical cone
Cervical node biopsy
Chalazion
Chemical face peel, limited
Circumcision
Cleft lip repair
Closed reduction (nose or zygoma)
Colonoscopy
Colostomy, revision
Colpotomy, diagnostic
Cryopexy for retinal tear
Cryoretinopexy
Culdoscopy
Cyst excision
Cystoscopy

Dermabrasion (partial or full)
Dermoid cyst of eyebrow, excision
Desiccation of condyloma
Dilatation and curettage
Dislocated shoulder or elbow
Dorsal slit, preputial

Ear (prominent, correction)
Ectropion and entropion
Electroshock therapy
Enucliation
Episiotomy
Esophageal dilatation
Esophagoscopy
Ethmoidectomy
Examination under anaesthesia
Excisions, skin tags, lesions
Excision of parotid, submaxillary stones
Excision of skin tumors
Excision of urethral caruncle
Exotosis, excision
Eye muscle operation- recession

Face lift, limited
Facial and neck lesions, removal
Facial wire, removal
Fasciectomy (finger, palm)
Fissure in ano
Fistula in ano
Fistulectomy
Flap revision
Foreign body excision
Foreign body excision with x-ray
Foreign body removal, ear
Foreign body removal
Fracture, closed reduction
Frenulectomy, tongue (children)
Fulguration of bladder neck
Funduscopic exam in children
Fusion

Ganglionectomy
Gastroscopy
Gynecomastia, excision

Hair transplantations
Hammertoes with tenotomies and resection of bones
Hand fasciectomy for arthritis
Hand infections
Hardware removal
Hemangioma, removal, nostril
Hemorrhoidectomy
Herniorrhaphy, inguinal
Hordeolum

Appendix Ad cont'd

Hydrocelectomy
Hymenotomy
Hysteroscopy

Impacted wisdom teeth, removal
Incision and drainage, dental
Inclusion cyst, excision
Inferior turbinate fracture
Inguinal/scrotal abscess, I and D
Intercostal anaesthetic block
Intercostal neurectomy
Intervertebral disc injection
Intraoral biopsy
Indectomy

Jaw, wiring of

Keratotomy
Kidney cannula, revision

Labia lesion, excision
Lacrimal duct probing
Laparoscopy
Laryngeal polypectomy
Laryngoscopy
Lesion excision with graft
Limited rhinoplasty
Lipoma, excision
Liver biopsy
Lithoplaxy
Lymph node biopsy

Mammoplasty
Mandibular/maxillary cyst removal
Manipulation of joints
Mass excision with scar revision
Mastoidectomy
Meatotomy
Medial ligament, knee, repair of
Meloplasty
Metatarsal heads, excision
Morton's neuroma
Mouth biopsy
Multiple teeth extractions
Muscle biopsy
Myotomy, recession or resection
Myringoplasty
Myringotomy, with or without tubes

Nasal fractures
Nerve repair
Neuroma

Odontectomy
Olecranon bursa, repair

Open and closed zygomatic fractures
Open reduction fracture
Oral biopsy
Oral surgery
Orchiectomy
Orchiopexy
Osteotomy
Otoplasty
Otoscopy
Otoscopy (with removal foreign body

Palate biopsy
Paracentesis
Pedicle flap, transfer
Pelvic endoscopy
Perineorrhaphy
Periodontal surgery
Periodontic surgery (full, partial)
Phalangectomy
Photocoagulation
Pilonidal cystectomy
Placement of dental arches
Plantar wart, excision
Polypectomy, cervical
Poly tubes, removal
Preauricular cyst excision
Preprosthesis surgery
Prostate biopsy
Pterygium

Rectal biopsy
Reduction of minor facial fractures
Reduction of nasal fractures
Renal biopsy
Resection, bilateral, unilateral
Rhytidectomy with blepharoplasty
Rhytidoplasty

Saline injection, intrauterine
Salivary gland surgery, minor
Scalene node biopsy
Scar revisions and relaxations
Septal reconstruction
Septo-rhinoplasty, limited
Sequestrectomy
Skin grafts, minor
Skin lesions, excision
Soft tissue tumor removal
Spinal tap
Splanchnic block
Stapedectomy
Strabotomy, pediatric
Subdural tap
Submucous resection
Synovectomy

Appendix Ad cont'd

Tarsorrhaphy
Tendon repair
Tenosynovectomy
Tenotomy, hand or foot
Tension measurements in children
Testes, excision
Testicular biopsy
Therapeutic abortion
Therapeutic retrobulbar injections
Thoracentesis, closed
Thyroglossal duct cyst
Tongue biopsy
Tongue surgery-glossectomy
Tonsilar tag excision
Tonsillectomy
Torticollis, repair
Transvaginal ligation of tubes
Trigger finger release
Tubal coagulation or ligation
Tympanoplasty

Ulnar nerve transfer

Umbilical herniorrhaphy with
Bilateral inguinal herniorrhaphy
Umbilical sinus, excision
Urethral catheter
Urethral dilation in children
Urethroscopy in children

Vaginal stenosis, release
Vaginal tumor, excision
Vaginal web, excision
Vaginoplasty
Varicocelectomy
Varicose vein ligation
Varicotomy
Vasectomy
Vasograms
Ventral femoral hernia
Vermillionectomy
Vulva biopsy

Xanthoma, excision

Z-plasty
Zygomatic arch procedures
Zygoma, reduction

Appendix B

TWENTY FIVE MOST COMMON DAY SURGERY PROCEDURES - 1977 (B.C.)

	codes ICDA-8*	Procedures	Cases
1.	70.2,70.3 70.4,70.9	Dilatation and curettage of the uterus	12,095
2.	A4.6,A9.1	Cystoscopy and Urethroscopy	7,938
3.	74.6-74.9	Therapeutic abortion	7,654
4.	99.3,99.4 99.6,99.9	Restoration of teeth	5,285
5.	A4.2-A4.5	Endoscopy	4,634
6.	92.0,92.1	Incision or excision of skin lesion	2,912
7.	17.0,17.9	Myringotomy	2,877
8.	60.1	Vasectomy	2,474
9.	65.2,A2.3	Breast biopsy	2,459
10.	68.2,68.5	Tubal ligation	1,936
11.	88.2	Excision of lesion of muscle tendon & fascia	1,734
12.	19.0-19.7	Nasal surgery	1,621
13.	88.9	Other operations on muscle, tendon, fascia and bursa	849
14.	80.8,81.6	Removal or application of fixation device without manipulation for reduction	800
15.	13.6	Photocoagulation of retina	737
16.	78.1	Dilatation and curettage after delivery or abortion	727
17.	83.0,83.3 84.0,84.4	Closed reduction of fracture of: wrist, elbow, knee or shoulder	696
18.	A1.8	Biopsy of stomach and intestines	686
19.	57.1,57.5	Meatotomy; dilation of urethra	658
20.	61.2	Circumcision	652
21.	56.1	Local excision and destruction of lesion of bladder	613
22.	21.1-21.3	Tonsillectomy and/or adenoidectomy	591
23.	92.4	Removal of nail, nailbed or nailfold	473
24.	A5.3	Peritonoscopy	459
25.	92.2	Wide or radical excision of skin lesion	384
	TOTAL		61,944

* International Classification of Diseases, Adapted, 8th edition

Appendix C

MOST COMMON DAY SURGERY PROCEDURES AT U.A.H.

The following pages contain two lists of day surgery procedures at U.A.H. The first list contains U.A.H. statistics corresponding to the procedures presented in Appendix B with the statistics for the five other most common day surgery procedures presented as well. The second list contains the U.A.H. list of the twenty five most common day surgery procedures ranked from one to twenty five. Both lists contain inpatient and outpatient data for 1980.

TWENTY-FIVE SURGICAL PROCEDURES

PERFORMED IN DAY-CARE - 1980

AND INPATIENT SURGERY[1]

	ICD-9-CM Codes*	Procedures	Outpatient* Cases	Inpatient** Cases
1.	69.09	Dilation and curettage of uterus	101	396
2.	57.32, 87.74	Cystoscopy, retrograde pyelogram	0 (no cystos)	44 (238 cystos)
3.	69.01, 69.51	Therapeutic abortion	201	166
4.	23.2, 23.3, 23.41	Restoration of teeth	1	35
5.	?	Endoscopy (ICDA-8 codes A4.2-A4.5)		
6.	86.03-86.09, 86.3	Incision/excision of lesion of skin and subcutaneous tissue	50	168
7.	20.01,20.09	Myringotomy	144	46
8.	63.73	Vasectomy	1	1 (112 done as secondary operations)
9.	85.12	Biopsy of breast	13	137
10.	66.29, 66.32, 66.39	Tubal ligation	174	131
11.	83.32, 83.39, 83.42	Excision lesion muscle, tendon, fascia	1	11
12.		Nasal surgery (ICDA-8 codes 19.0-19.7)		
13.	83.99	Other operations on muscle, tendon, fascia and bursa	0	0
14.	78.5_, 78.6_	Removal or application of fixation device without manipulation for reduction	26	104
15.	14.23, 14.24, 14.25,	Photocoagulation of retina 14.33, 14.34, 14.35, 14.53, 14.54, 14.55	0	4
16.	69.02, 69.52	Dilation and curettage after delivery or abortion	1	225
17.	79.71, 79.72, 79.73, 79.76	Closed reduction of fracture of: wrist, elbow, knee or shoulder	1	16
18.	44.15, 45.15, 45.26,	Biopsy of stomach and intestines 45.27	0	264
19.	58.1 or 58.5 with 58.6	Meatotomy; dilation of urethra	0	0
20.	64.0	Circumcision	16	20
21.	57.49, 57.59	Local excision and destruction of lesion of bladder	0	106

			Outpatient Cases	Inpatient Cases
22.	28.2, 28.3, 28.6	Tonsillectomy and/or adenoidectomy	83	117
23.	86.23	Removal of nail, nailbed, or nailfold	4	5
24.	54.21	Peritoneoscopy (laparoscopy)	66	270
25.	86.4	Wide or radical excision of lesion skin	0	26

[1]Only primary operations were included in the totals

*Source: 1980 Semi-Annual Day Surgery Procedure Indexes

**Source: 1980 Monthly Procedure Indexes

Coding system used for 1980 was ICD-9-CM (International Classification of Diseases - Clinical Modification. The coding system used for the tables representing Day Surgery and Inpatient Surgery in B.C. was ICDA-8 which accounts for the fact that the codes represented here are not the same.

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Also, Item #5 and Item #12 was too vague (Endoscopy + Nasal Surgery) so analogous codes from the ICD-9-CM system could not be pulled. ICDA-8 code books were unavailable.

ICD - 9 CM CODES *	PROCEDURE	OUTPATIENT * CASES	INPATIENT ** CASES
1. 550. -0 550. -2, 53--	Non-Recurrent Inguinal Hernia	14	263
2. 454.- 38.59, 38.53	Varicose Veins	1	58
3. 455.- 49.46	Haemorrhoids	0	121
4. 366.- 13.1- 13.6	Cataracts	0	403
5. 685.0, 685.1 86.03, 86.21	Pilonidal Sinus	0	27

* Source: 1980 Semi-Annual Day Surgery Procedure Index

** Source: Monthly Procedure Indexes

TABLE IV

SURGICAL OUTPATIENTS 1980

Classification of Patients

Clinical Service	Patients	Patients by Age: NB - 16	17 - 39	40 - 64	65 years +	Total
02 - Pediatrics	2	-	2	-	-	2
40 - General Surgery	54	25	16	13		54
48 - Ophthalmology	233	189	18	13	13	233
50 - E.N.T.	250	206	36	7	1	250
54 - Dental	1	1	-	-	-	1
56 - Neurosurgery	10	-	4	5	1	10
58 - Orthopedics	111	6	64	39	2	111
60 - Plastic Surgery	384	40	249	88	7	384
62 - Urology	15	13	1	1	-	15
70 - Gynecology	355	1	296	58	-	355
75 - Abortion	202	19	178	5	-	202
Total	1617	500	864	229	24	1617

CODE	Procedure	Day Surgery	Inpatient Surgery
66.29, 66.32, + 66.39	Tubal ligation	200	330
69.51	Therapeutic abortion	199	154
15.1_	Operations on one extraocular muscle involving temporary detachment from globe	173	180
20.01	Myringotomy with insertion tube	158	104
69.0_	Dilation & curettage uterus	119	803
21.8_	Repair & plastic O.R.'s on nose	113	114
86.__	Operations on skin & subcutaneous tissue	99	1357
08.__	Operations on eyelids	86	165
28.2, 28.3, + 28.6	Tonsillectomy and/or adenoidectomy	83	132
85.5_	Augmentation mammoplasty	74	38

	CODE	Procedure	Day Surgery	Inpatient Surgery
1.	54.21	Laparoscopy	66	375
2.	04.__	Operations on cranial and peripheral nerves	34	245
3.	78.__	Other operations on bones, except facial bones	33	261
4.	18.__	Operations on external ear	30	76
5.	21.50	Submucous resection nasal septum	29	230
6.	66.80	Insufflation of fallopian tube	26	126
7.	77.__	Incision/excision/division of other bones	25	412
8.	09.43	Probing of nasolacrimal duct	24	7
9.	21.62	Fracture turbinates and other turbinectomy	24	147
0.	97.71	Removal I.U.C.D.	24	33
1.	15.50	Transposition of extraocular muscle	18	29
2.	53.__	Herniorrhaphy	16	471
3.	64.0	Circumcision	16	31
	85.93	Revision of implant, breast	14	19
5.	85.12	Excisional biopsy breast	13	175

ource: 1980 Monthly Operation Indexes
1980 Semi-Annual Day Surgery Operation Indexes + 1980 Semi-Annual Planning Reports

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Appendix D

MEDICUS NURSE STAFFING SYSTEM

The following pages contain a description of the entire Medicus Nurse Staffing System.

THE MEDICUS NURSE STAFFING SYSTEM

The Medicus approach to developing an Information System for Nursing includes the following elements:

- Patient Classification
- Workload Measurement
- Quality Monitoring
- Long-Range Staffing
- Variable Staffing
- Management Reporting

Basic Medicus methodologies and systems are adapted to meet the specific needs of the Hospital. These system elements provide Nursing with more objective mechanisms for measuring and monitoring workload and setting staffing levels to appropriately and consistently meet patient care requirements. Each element is described briefly in the sections following:

PATIENT CLASSIFICATION

Patient Classification Systems are used as a basis for measuring workload on a nursing unit:

- Patients are grouped into categories based upon their relative need for nursing care.
- Sets of acuity indicators are employed as a basis for classifying patients into one of four discreet categories.
- Prime requisite of indicators is that they are objective and can be applied consistently by all staff.
- Prime requisite of a classification system is that it be predictive of nursing workload (see Exhibit 1).

PATIENT CLASSIFICATION FORM

DATE: SHIFT:

UNIT:

	ROOM NUMBER																									
	PATIENTS NAME																									
CONDITIONS	ADMISSION OR TRANSFER IN																									
	DISCHARGE OR TRANSFER OUT																									
	LESS THAN 2 YEARS OLD																									
	2 - 6 YRS. OLD																									
	UNCONSCIOUS																									
	CONFUSED/RETRD. OR DISORIENTED																									
	BLIND OR NEARLY BLIND																									
	ISOLATION/ISOLETTE																									
	PARTIAL IMMOBILITY																									
	COMPLETE IMMOBILITY																									
	RESPIRATOR																									
	TRACHEOSTOMY																									
	INCONTINENT/ DIAPHORETIC																									
BASIC CARE	UP AD LIB																									
	UP WITH ASSISTANCE																									
	BED REST																									
	BATH WITH ASSISTANCE																									
	BATH TOTAL																									
	ASSISTANCE WITH ORAL/TUBE FEED																									
	TOTAL ORAL/TUBE FEED																									
THERAPEUTIC NEEDS	INTAKE & OUTPUT																									
	IV'S AND SITE CARE																									
	SPECIMEN COLLECTION																									
	TUBE CARE																									
	EXTENSIVE SKIN CARE																									
	WOUND AND/OR SIMPLE SKIN CARE																									
	OXYGEN THERAPY																									
	MONITORING																									
	VITAL SIGNS Q2 HRS. OR MORE OFTEN																									
	SPECIAL TEACHING NEEDS																									
	SPECIAL EMOTIONAL NEEDS																									
	PREP'D FOR TEST AND/OR PROC.																									
	TOTAL POINTS																									
	PATIENT TYPE																									
	NURSE'S INITIALS																									

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WORKLOAD MEASUREMENT

Staffing requirements are determined by translating the number of patients of each classification on a nursing unit into a meaningful measurement of workload.

- Accounts for fixed and variable requirements on a nursing unit.
- Accounts for direct and indirect care requirements of patients.
- Census by classification is translated into an index of workload.

STAFFING REQUIREMENTS

Under the proposed methodology, staffing requirements are determined in relation to the relative care requirements of patients and the desired methods of care delivery. The mechanism for determining staffing requirements incorporates nursing philosophies, methods of care delivery and quality of care and provides a productivity index for nursing.

QUALITY MONITORING

Quality of care is an important factor in determining appropriate staffing levels.

As an integral component of the proposed staffing methodology a system for monitoring quality of nursing care will be installed at the Hospital. The system is a process oriented methodology for concurrent monitoring of the quality of patient care which was developed by Medicus under contract from the U.S. Department of Health Education and Welfare.

- Measurements made in relation to six major areas (Exhibit 2).
- Involves:
  - patient and staff interviews
  - observation of the unit, patient and patient environment
  - chart and nursing care plan review
- Multiple observations are made, using a different subset of criteria each time, on each unit.
- The methodology has been extensively tested for reliability and validity.

Results of quality assessments are used as a parameter and a check for the proposed Medicus staffing methodologies.

Exhibit 2

RUSH-MEDICUS NURSING PROCESS STRUCTURE

OBJECTIVE AND SUB-OBJECTIVE STRUCTURE

	General Clinical Areas	ER	L&D	PSYCH	SCN
1.0 The Plan of Nursing Care is Formulated					
1.1 The condition of the patient is assessed on admission	X	X	X	X	X
1.2 Data relevant to hospital care are ascertained on admission	X	X	X	X	X
1.3 The current condition of the patient is assessed.	X	0	X	X	X
1.4 The written plan of nursing care is formulated.	X	0	X	X	X
1.5 The plan of nursing care is coordinated with the medical plan of care.	X	X	X	X	X
2.0 The Physical Needs of the Patient Are attended					
2.1 The patient is protected from accident and injury.	X	X	X	X	X
2.2 The need for physical comfort and rest is attended.	X	X	X	X	X
2.3 The need for physical hygiene is attended.	X	0	X	0	X
2.4 The need for a supply of oxygen is attended.	X	X	X	0	X
2.5 The need for activity is attended.	X	0	X	0	X
2.6 The need for nutrition and fluid balance is attended.	X	X	X	X	X
2.7 The need for elimination is attended.	X	0	X	0	X
2.8 The need for skin care is attended.	X	0	0	0	X
2.9 The patient is protected from infection.	X	X	X	0	X
3.0 The Non-Physical (Psychological, Emotional, Mental, Social Needs of the patient Are Attended.					
3.1 The patient is oriented to hospital facilities on admission.	X	0	X	X	X
3.2 The patient is extended social courtesy by the nursing staff.	X	X	X	X	X
3.3 The patient's privacy and civil rights are honored.	X	X	X	X	X
3.4 The need for psybhological-emotional well-being is attended through interpersonal communication.	X	X	X	X	X
3.5 The patient is taught measures of health maintenance and illness prevention.	X	X	0	X	X
3.6 The patient's family is included in the nursing care process.	X	X	X	X	X
3.7 The need for psycho-emotional well-being is attended through therapeutic milieu.	X	X	X	X	X
4.0 Achievement of Nursing Care Objectives is Evaluated.					
4.1 Records document the care provided for the patient.	X	X	X	X	X
4.2 The patient's response to therapy is evaluated.	X	X	X	X	X
5.0 Unit Procedures Are Followed for the Protection of All Patients.					
5.1 Isolation and decontamination procedures are followed.	X	X	X	0	X
5.2 The unit is prepared for emergency situations.	X	X	X	X	X
5.3 Medical-legal procedures are followed.	0	X	0	0	0
5.4 Safety and protective procedures are followed.	0	0	0	X	0
6.0 The Delivery of Nursing Care is Facilitated by Administration and Managerial Services					
6.1 Nursing reporting follows prescribed standards.	X	X	X	X	X
6.2 Nursing management is provided.	X	X	X	X	X
6.3 Clerical services are provided.	X	X	X	X	X
6.4 Environmental and housekeeping services are provided.	X	X	X	X	X
6.5 Professional and administrative services are provided.	X	X	X	X	X

LONG-RANGE STAFFING

As a result of this project Medicus Canada will provide the Hospital with preliminary specifications of appropriate staffing levels for all study units. This includes the formulation of budget requirements to support the recommended staffing levels.

VARIABLE STAFFING

Variable staffing system proposed for implementation at the Hospital will account for the day-to-day variability in both workload and staff availability.

- Facilitate allocation of nursing staff among units to match available staff to patient needs.
- Allows for more cost-effective utilization of float and call-in personnel.
- Minimize variations in staff size-to-workload ratios.
- Allow for reductions in the cost of nursing service by providing management with a better understanding of fluctuations in workload and greater control over the staffing function.

MANAGEMENT REPORTING

Management reporting elements of the staffing system provide management with timely information regarding the operation of nursing services. The reporting system ties together both quantitative and qualitative measures of nursing performance. Reports include:

- Daily Workload and Staffing Reports

- Monthly Staffing Summaries
  - Census & Workload
  - Required Staffing
  - Scheduled Staffing
  - Actual Staffing
  - Variances
  - Quality Data

- Budget Analysis (Year-to-Date)
  - Census & Workload
  - Required Hours
  - Actual Hours
  - Variances
  - Quality Data

Management reports are designed for each level of management and are developed in conjunction with nursing administration.

Appendix E

PATIENT CLASSIFICATION FORMS

The following pages contain the detailed Patient Classification Forms for each of the six procedures. Also contained is the Medicus ruler used for totalling up the numbers corresponding to the various nursing care needs to form a patient acuity classification.

DATE: DILATATION AND CURETTAGE

PATIENT CLASSIFICATION FORM

3880-0304-15-10-80-NURS SERV

CLASS	POINT RANGE
I	0 - 24
II	25 - 48
III	49 - 120
IV	121 & UP

	Admission or Transfer in	Discharge or Transfer Out	Less Than 2Years Old	2 - 6 Yrs. Old	Unconscious	Confused/Retrd or Disoriented	Blind or Nearly Blind	Isolation/Isolette	Partial Immobility	Complete Immobility	Respirator	Tracheostomy	Incontinent/ Diaphoretic	Up Ad Lib	Up With Assistance	Bed Rest	Bath With Assistance	Bath Total	Assistance With Oral/Tube Feed	Total Oral/Tube Feed	I & O	Specimen Collection	Tube Care	Extensive Skin Care	Wound and /or Simple Skin Care	Oxygen Therapy	Monitoring	Vital Signs Q2 Hrs. or More Often	IV's and Site Care	Special Teaching Needs	Special Emotional Needs	Prep'd For Test and/or Proc.	Total Points	Patient Type
WEIGHTS	3	2	9	15	24	15	12	9	9	24	24	6	18	0	5	10	3	4	3	10	2	2	8	24	8	6	24	12	12	12	12	3		
DAY ADMITTED	X													X								X								X			20	II
IMMEDIATELY POST-OP									X						X		X								X			X	X	X			61	III
EVENING POST-OP															X										X					X			25	II
DAY AFTER SURGERY		X												X											X					X			22	I

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Admission or Transfer In: Place a mark if the patient has already arrived on the unit during the day shift, or if it is known that a patient is to arrive on the unit during the day shift. If indicators of the patient to arrive are known, then they should be recorded. This may apply to patient care areas that are receiving patients from the Operating Room, PAR, or from Surgical Intensive Care.

Discharge or Transfer Out: Mark this indicator if patient is certain to be discharged or transferred from the unit during the day shift.

Less Than 2 Years Old: Self explanatory. Refers to the needs related to growth and development.

2 – 6 Years Old: Self explanatory. Refers to the needs related to growth and development.

Unconscious: Applies to the patient who is unconscious. Does not include lethargic or stuporous patients. The patient's basic care should not be listed as up ad lib or up with assistance. Special Teaching Needs and Special Emotional Needs would also be erroneous in this situation unless directed toward the family.

Confused, Retarded or Disoriented: Applies to the patients who are confused (unable to follow commands, care for self, etc.), disoriented (as to time and place) or retarded (mental age significantly below chronologic age). Does not apply to the unconscious patient.

Blind or Nearly Blind: Place a mark if patient relies on nursing for needs due to blindness. This should also be marked for the patient with eye patches which result in the patient requiring nursing assistance; e.g. post-op cataract. Do not mark if patient is unconscious.

Isolation/Isolette: Applies to the patient requiring medical aseptic and protective care. Also refers to the infant requiring a controlled environment; e.g. incubator.

Partial Immobility: Place a mark for patients partially immobilized as a result of IV's, cast, splint, traction, restraints, arthritis, etc., which lead to dependence on nursing for assistance with routine activities. Do not routinely check for infants.

Complete Immobility: Place a mark for the patient with a high degree of immobility or the patient with complete immobility. These are patients wo are incapable of participation in most activities, such as turning and moving. Do not routinely check for infants. Examples are the quadraplegic or unconscious patient.

Respirator: If this is checked, oxygen therapy category must be checked.

Tracheostomy: Place a mark for any patient who has a tracheostomy or an endotrach. Also mark tube care, under therapeutic needs, if patient relies upon nursing for care of tube.

Incontinent of Bowel or Bladder/Diaphoretic: Refers to patient who is incontinent of urine or feces. Does not need to be marked if patient has indwelling catheter. Also applies to patient with extreme diaphoresis or patient under high humidity tent who requires linen to be changed frequently (at least two times per shift). Does not routinely apply to infants who are not yet toilet trained.

The next three indicators: Up Ad Lib; Up With Assistance; and Bed Rest, refer to the activity level of a patient. One of these three indicators is to be checked for each patient classified.

Up Ad Lib: Self explanatory. Up With Assistance or Bed Rest cannot be checked if Up Ad Lib is checked.

Up With Assistance: Self explanatory. Bed Rest or Up Ad Lib cannot be checked if Up With Assistance is checked.

Bed Rest: Check if patient is restricted to bed without bathroom privileges. Includes all infants. Up Ad Lib or Up With Assistance cannot be checked if Bed Rest is checked.

SURGERY– DEFINITIONS OF INDICATORS

Bath With Assistance: Check for patient needing help with (1) setting up bath equipment and/or (2) washing small areas of body; e.g., back. Also includes patients needing supervision during bath; e.g., child in tub.

Bath Total: Includes patients needing entire bath or patients who are only able to bathe small areas of the body; e.g., face, hands, and genitalia.

Oral/Tube Feed With Assistance: Place a mark if patient requires tray or tube feeding to be set up by nursing personnel. Patient is then capable of feeding self or administering own tube feeding with minimal supervision.

Oral/Tube Feed Total: Place check mark if patient is unable to feed self. It is also appropriate to check this column if patient requires constant supervision during the meal.

Intake and Output: Place a mark if patient requires recording of Intake or Output or both.

Specimen Collection: Place a mark if patient requires specimen collection by nursing, whether the specimen is sent to a laboratory or used on the unit (e.g., urine for specific gravity or fractional urines). This column is not marked if specimen is not obtained by unit personnel (e.g., blood work drawn by the lab).

Tube Care: Place a mark if patient needs assistance with tubes; e.g., suction for trach, cleaning trach tube, irrigating and aspirating nasogastric tube, irrigating Foley catheters, or pericare for patients with Foley catheters.

Extensive Wound and/or Skin Care: This indicator includes those patients with extensive burns, excoriations, or dermatological problems requiring extensive care (e.g., dressing that takes 1-1½ hours q.i.d.).

Wound and/or Simple Skin Care: This indicator includes those patients requiring close observation or basic skin care of wound or operative site or those patients prone to decubiti who are receiving preventative skin care. IV site care is not included. Do not check for routine A.M. and/or P.M. care.

Oxygen Therapy: Place a mark if patient is to receive any oxygen therapy, heated aerosol, high humidity tent, IPPB, nasal 0_2, sporometer, etc. This applies if nursing must be aware of, or directly responsible for, the oxygen therapy.

Monitoring: Refers to patients being mechanically monitored as well as those patients requiring frequent visual observation Q15 minutes or more often (e.g., psychiatric or retarded patient, patient being weaned from a ventilator, patients on medicated IV drips which require very close monitoring). Do not routinely check for infants and children.

Vital Signs Q 2 Hours or More Often: Place a mark for patients requiring monitoring of vital signs, Q 2 hours or more often. Vital signs include, TPR, BP, CVP monitoring, neuro signs, and extremity pulses, etc.

IV's and Site Care: Self explanatory. Includes A–V shunts, T.P.N., arterial and central lines, heparin locks.

Special Teaching Needs: Place a mark if patient and/or family requires special instructions; e.g., diabetic teaching, pre and specific post-op teaching. This does not include routine admission instructions, familiarization with environment, or instructions for laboratory tests unless the patient and/or family exhibit difficulties in following instructions.

Special Emotional Needs: Place a mark for patients and for families needing additional emotional support because they are experiencing stress beyond the usual stress of hospitalization, are having difficulty coping, are unable to cope, or are exhibiting inappropriate behavior (e.g., expressing suicidal ideations, highly withdrawn, aggressiveness). If this item is checked, the emotional needs should be documented in Nursing Assessment and Plan.

Prepared for Tests and/or Procedures: Place a mark if patient requires preparation by nursing during this shift for a test or a procedure; e.g., surgery, preparation for endoscopy.

DATE: LAPAROSCOPY

PATIENT CLASSIFICATION FORM

UNIT:	CONDITIONS													BASIC CARE							THERAPEUTIC NEEDS														
PATIENTS NAME	Admission or Transfer in	Discharge or Transfer Out	Less Than 2Years Old	2 - 6 Yrs. Old	Unconscious	Confused/Retrd or Disoriented	Blind or Nearly Blind	Isolation/Isolette	Partial Immobility	Complete Immobility	Respirator	Tracheostomy	Incontinent/ Diaphoretic	Up Ad Lib	Up With Assistance	Bed Rest	Bath With Assistance	Bath Total	Assistance With Oral/Tube Feed	Total Oral/Tube Feed	I & O	Specimen Collection	Tube Care	Extensive Skin Care	Wound and /or Simple Skin Care	Oxygen Therapy	Monitoring	Vital Signs Q2 Hrs. or More Often	IV's and Site Care	Special Teaching Needs	Special Emotional Needs	Prep'd For Test and/or Proc.	Total Points	Patient Type
DAY ADMITTED	X													X								X								X		20	I
IMMEDIATELY POST-OP									X						X		X								X			X	X	X		61	III
EVENING POST-OP															X										X					X		35	II
DAY AFTER SURGERY		X												X											X					X		22	I

Form Reviewed By: _____ R.N. Please indicate time form completed _____

UH 422 (2/78)

Includes all infants. Up Ad Lib or Up With Assistance cannot be checked if ... tion for endoscopy.

Admission or Transfer In: Place a mark if the patient has already arrived on the unit during the day shift, or if it is known that a patient is to arrive on the unit during the day shift. If indicators of the patient to arrive are known, then they should be recorded. This may apply to patient care areas that are receiving patients from the Operating Room, PAR, or from Surgical Intensive Care.

Discharge or Transfer Out: Mark this indicator if patient is certain to be discharged or transferred from the unit during the day shift.

Less Than 2 Years Old: Self explanatory. Refers to the needs related to growth and development.

2 – 6 Years Old: Self explanatory. Refers to the needs related to growth and development.

Unconscious: Applies to the patient who is unconscious. Does not include lethargic or stuporous patients. The patient's basic care should not be listed as up ad lib or up with assistance. Special Teaching Needs and Special Emotional Needs would also be erroneous in this situation unless directed toward the family.

Confused, Retarded or Disoriented: Applies to the patients who are confused (unable to follow commands, care for self, etc.), disoriented (as to time and place) or retarded (mental age significantly below chronologic age). Does not apply to the unconscious patient.

Blind or Nearly Blind: Place a mark if patient relies on nursing for needs due to blindness. This should also be marked for the patient with eye patches which result in the patient requiring nursing assistance; e.g. post-op cataract. Do not mark if patient is unconscious.

Isolation/Isolette: Applies to the patient requiring medical aseptic and protective care. Also refers to the infant requiring a controlled environment; e.g. incubator.

Partial Immobility: Place a mark for patients partially immobilized as a result of IV's, cast, splint, traction, restraints, arthritis, etc., which lead to dependence on nursing for assistance with routine activities. Do not routinely check for infants.

Complete Immobility: Place a mark for the patient with a high degree of immobility or the patient with complete immobility. These are patients wo are incapable of participation in most activities, such as turning and moving. Do not routinely check for infants. Examples are the quadraplegic or unconscious patient.

Respirator: If this is checked, oxygen therapy category must be checked.

Tracheostomy: Place a mark for any patient who has a tracheostomy or an endotrach. Also mark tube care, under therapeutic needs, if patient relies upon nursing for care of tube.

Incontinent of Bowel or Bladder/Diaphoretic: Refers to patient who is incontinent of urine or feces. Does not need to be marked if patient has indwelling catheter. Also applies to patient with extreme diaphoresis or patient under high humidity tent who requires linen to be changed frequently (at least two times per shift). Does not routinely apply to infants who are not yet toilet trained.

The next three indicators: Up Ad Lib; Up With Assistance; and Bed Rest, refer to the activity level of a patient. One of these three indicators is to be checked for each patient classified.

Up Ad Lib: Self explanatory. Up With Assistance or Bed Rest cannot be checked if Up Ad Lib is checked.

Up With Assistance: Self explanatory. Bed Rest or Up Ad Lib cannot be checked if Up With Assistance is checked.

Bed Rest: Check if patient is restricted to bed without bathroom privileges. Includes all infants. Up Ad Lib or Up With Assistance cannot be checked if

SURGERY– DEFINITIONS OF INDICATORS

Bath With Assistance: Check for patient needing help with (1) setting up bath equipment and/or (2) washing small areas of body; e.g., back. Also includes patients needing supervision during bath; e.g., child in tub.

Bath Total: Includes patients needing entire bath or patients who are only able to bathe small areas of the body; e.g., face, hands, and genitalia.

Oral/Tube Feed With Assistance: Place a mark if patient requires tray or tube feeding to be set up by nursing personnel. Patient is then capable of feeding self or administering own tube feeding with minimal supervision.

Oral/Tube Feed Total: Place check mark if patient is unable to feed self. It is also appropriate to check this column if patient requires constant supervision during the meal.

Intake and Output: Place a mark if patient requires recording of Intake or Output or both.

Specimen Collection; Place a mark if patient requires specimen collection by nursing, whether the specimen is sent to a laboratory or used on the unit (e.g., urine for specific gravity or fractional urines). This column is not marked if specimen is not obtained by unit personnel (e.g., blood work drawn by the lab).

Tube Care: Place a mark if patient needs assistance with tubes; e.g., suction for trach, cleaning trach tube, irrigating and aspirating nasogastric tube, irrigating Foley catheters, or pericare for patients with Foley catheters.

Extensive Wound and/or Skin Care: This indicator includes those patients with extensive burns, excoriations, or dermatological problems requiring extensive care (e.g., dressing that takes 1-1½ hours q.i.d.).

Wound and/or Simple Skin Care: This indicator includes those patients requiring close observation or basic skin care of wound or operative site or those patients prone to decubiti who are receiving preventative skin care. IV site care is not included. Do not check for routine A.M. and/or P.M. care.

Oxygen Therapy: Place a mark if patient is to receive any oxygen therapy, heated aerosol, high humidity tent, IPPB, nasal 0_2, sporometer, etc. This applies if nursing must be aware of, or directly responsible for, the oxygen therapy.

Monitoring: Refers to patients being mechanically monitored as well as those patients requiring frequent visual observation Q15 minutes or more often (e.g., psychiatric or retarded patient, patient being weaned from a ventilator, patients on medicated IV drips which require very close monitoring). Do not routinely check for infants and children.

Vital Signs Q 2 Hours or More Often: Place a mark for patients requiring monitoring of vital signs, Q 2 hours or more often. Vital signs include, TPR, BP, CVP monitoring, neuro signs, and extremity pulses, etc.

IV's and Site Care: Self explanatory. Includes A–V shunts, T.P.N., arterial and central lines, heparin locks.

Special Teaching Needs: Place a mark if patient and/or family requires special instructions; e.g., diabetic teaching, pre and specific post-op teaching. This does not include routine admission instructions, familiarization with environment, or instructions for laboratory tests unless the patient and/or family exhibit difficulties in following instructions.

Special Emotional Needs: Place a mark for patients and for families needing additional emotional support because they are experiencing stress beyond the usual stress of hospitalization, are having difficulty coping, are unable to cope, or are exhibiting inappropriate behavior (e.g., expressing suicidal ideations, highly withdrawn, aggressiveness). If this item is checked, the emotional needs should be documented in Nursing Assessment and Plan.

Prepared for Tests and/or Procedures: Place a mark if patient requires preparation by nursing during this shift for a test or a procedure; e.g., surgery, preparation for endoscopy.

DATE: NON-RECURRENT INGUINAL HERNIA

PATIENT CLASSIFICATION FORM

UNIT:	CONDITIONS													BASIC CARE							THERAPEUTIC NEEDS													
PATIENTS NAME	Admission or Transfer in	Discharge or Transfer Out	Less Than 2Years Old	2 - 6 Yrs. Old	Unconscious	Confused/Retrd or Disoriented	Blind or Nearly Blind	Isolation/Isolette	Partial Immobility	Complete Immobility	Respirator	Tracheostomy	Incontinent/ Diaphoretic	Up Ad Lib	Up With Assistance	Bed Rest	Bath With Assistance	Bath Total	Assistance With Oral/Tube Feed	Total Oral/Tube Feed	I & O	Specimen Collection	Tube Care	Extensive Skin Care	Wound and /or Simple Skin Care	Oxygen Therapy	Monitoring	Vital Signs Q2 Hrs. or More Often	IV's and Site Care	Special Teaching Needs	Special Emotional Needs	Prep'd For Test and/or Proc.	Total Points	Patient Type
DAY ADMITTED	X													X								X								X			17	I
IMMEDIATELY POST-OP									X							X		X			X				X	X		X	X	X			75	III
EVENING POST-OP															X		X								X								16	I
DAY AFTER SURGERY														X			X								X								11	I

Form Reviewed By: ______________________ R.N. Please indicate time form completed ______________________

Admission or Transfer In: Place a mark if the patient has already arrived on the unit during the day shift, or if it is known that a patient is to arrive on the unit during the day shift. If indicators of the patient to arrive are known, then they should be recorded. This may apply to patient care areas that are receiving patients from the Operating Room, PAR, or from Surgical Intensive Care.

Discharge or Transfer Out: Mark this indicator if patient is certain to be discharged or transferred from the unit during the day shift.

Less Than 2 Years Old: Self explanatory. Refers to the needs related to growth and development.

2 – 6 Years Old: Self explanatory. Refers to the needs related to growth and development.

Unconscious: Applies to the patient who is unconscious. Does not include lethargic or stuporous patients. The patient's basic care should not be listed as up ad lib or up with assistance. Special Teaching Needs and Special Emotional Needs would also be erroneous in this situation unless directed toward the family.

Confused, Retarded or Disoriented: Applies to the patients who are confused (unable to follow commands, care for self, etc.), disoriented (as to time and place) or retarded (mental age significantly below chronologic age). Does not apply to the unconscious patient.

Blind or Nearly Blind: Place a mark if patient relies on nursing for needs due to blindness. This should also be marked for the patient with eye patches which result in the patient requiring nursing assistance; e.g. post-op cataract. Do not mark if patient is unconscious.

Isolation/Isolette: Applies to the patient requiring medical aseptic and protective care. Also refers to the infant requiring a controlled environment; e.g. incubator.

Partial Immobility: Place a mark for patients partially immobilized as a result of IV's, cast, splint, traction, restraints, arthritis, etc., which lead to dependence on nursing for assistance with routine activities. Do not routinely check for infants.

Complete Immobility: Place a mark for the patient with a high degree of immobility or the patient with complete immobility. These are patients wo are incapable of participation in most activities, such as turning and moving. Do not routinely check for infants. Examples are the quadraplegic or unconscious patient.

Respirator: If this is checked, oxygen therapy category must be checked.

Tracheostomy: Place a mark for any patient who has a tracheostomy or an endotrach. Also mark tube care, under therapeutic needs, if patient relies upon nursing for care of tube.

Incontinent of Bowel or Bladder/Diaphoretic; Refers to patient who is incontinent of urine or feces. Does not need to be marked if patient has indwelling catheter. Also applies to patient with extreme diaphoresis or patient under high humidity tent who requires linen to be changed frequently (at least two times per shift). Does not routinely apply to infants who are not yet toilet trained.

The next three indicators: Up Ad Lib; Up With Assistance; and Bed Rest, refer to the activity level of a patient. One of these three indicators is to be checked for each patient classified.

Up Ad Lib: Self explanatory. Up With Assistance or Bed Rest cannot be checked if Up Ad Lib is checked.

Up With Assistance: Self explanatory. Bed Rest or Up Ad Lib cannot be checked if Up With Assistance is checked.

Bed Rest: Check if patient is restricted to bed without bathroom privileges. Includes all infants. Up Ad Lib or Up With Assistance cannot be checked if

SURGERY– DEFINITIONS OF INDICATORS

Bath With Assistance: Check for patient needing help with (1) setting up bath equipment and/or (2) washing small areas of body; e.g., back. Also includes patients needing supervision during bath; e.g., child in tub.

Bath Total: Includes patients needing entire bath or patients who are only able to bathe small areas of the body; e.g., face, hands, and genitalia.

Oral/Tube Feed With Assistance: Place a mark if patient requires tray or tube feeding to be set up by nursing personnel. Patient is then capable of feeding self or administering own tube feeding with minimal supervision.

Oral/Tube Feed Total: Place check mark if patient is unable to feed self. It is also appropriate to check this column if patient requires constant supervision during the meal.

Intake and Output: Place a mark if patient requires recording of Intake or Output or both.

Specimen Collection; Place a mark if patient requires specimen collection by nursing, whether the specimen is sent to a laboratory or used on the unit (e.g., urine for specific gravity or fractional urines). This column is not marked if specimen is not obtained by unit personnel (e.g., blood work drawn by the lab).

Tube Care: Place a mark if patient needs assistance with tubes; e.g., suction for trach, cleaning trach tube, irrigating and aspirating nasogastric tube, irrigating Foley catheters, or pericare for patients with Foley catheters.

Extensive Wound and/or Skin Care: This indicator includes those patients with extensive burns, excoriations, or dermatological problems requiring extensive care (e.g., dressing that takes 1-1½ hours q.i.d.).

Wound and/or Simple Skin Care: This indicator includes those patients requiring close observation or basic skin care of wound or operative site or those patients prone to decubiti who are receiving preventative skin care. IV site care is not included. Do not check for routine A.M. and/or P.M. care.

Oxygen Therapy: Place a mark if patient is to receive any oxygen therapy, heated aerosol, high humidity tent, IPPB, nasal O_2, sporometer, etc. This applies if nursing must be aware of, or directly responsible for, the oxygen therapy.

Monitoring: Refers to patients being mechanically monitored as well as those patients requiring frequent visual observation Q15 minutes or more often (e.g., psychiatric or retarded patient, patient being weaned from a ventilator, patients on medicated IV drips which require very close monitoring). Do not routinely check for infants and children.

Vital Signs Q 2 Hours or More Often: Place a mark for patients requiring monitoring of vital signs, Q 2 hours or more often. Vital signs include, TPR, BP, CVP monitoring, neuro signs, and extremity pulses, etc.

IV's and Site Care: Self explanatory. Includes A–V shunts, T.P.N., arterial and central lines, heparin locks.

Special Teaching Needs: Place a mark if patient and/or family requires special instructions; e.g., diabetic teaching, pre and specific post-op teaching. This does not include routine admission instructions, familiarization with environment, or instructions for laboratory tests unless the patient and/or family exhibit difficulties in following instructions.

Special Emotional Needs: Place a mark for patients and for families needing additional emotional support because they are experiencing stress beyond the usual stress of hospitalization, are having difficulty coping, are unable to cope, or are exhibiting inappropriate behavior (e.g., expressing suicidal ideations, highly withdrawn, aggressiveness). If this item is checked, the emotional needs should be documented in Nursing Assessment and Plan.

Prepared for Tests and/or Procedures; Place a mark if patient requires preparation by nursing during this shift for a test or a procedure; e.g., surgery, prepara-

DATE: BREAST BIOPSY

PATIENT CLASSIFICATION FORM

UNIT:	CONDITIONS													BASIC CARE							THERAPEUTIC NEEDS														
PATIENTS NAME	Admission or Transfer In	Discharge or Transfer Out	Less Than 2Years Old	2 - 6 Yrs. Old	Unconscious	Confused/Retrd or Disoriented	Blind or Nearly Blind	Isolation/Isolette	Partial Immobility	Complete Immobility	Respirator	Tracheostomy	Incontinent/ Diaphoretic	Up Ad Lib	Up With Assistance	Bed Rest	Bath With Assistance	Bath Total	Assistance With Oral/Tube Feed	Total Oral/Tube Feed	I & O	Specimen Collection	Tube Care	Extensive Skin Care	Wound and /or Simple Skin Care	Oxygen Therapy	Monitoring	Vital Signs Q2 Hrs. or More Often	IV's and Site Care	Special Teaching Needs	Special Emotional Needs	Prep'd For Test and/or Proc.	Total Points	Patient Type
DAY ADMITTED	X													X			X					X			X					X		X	31	II
IMMEDIATELY POST-OP									X							X		X			X				X	X		X	X				63	III
EVENING POST-OP															X										X								13	I
DAY AFTER SURGERY														X											X					X			20	I

Form Reviewed By: _____ R.N. Please indicate time form completed _____

Includes all infants. Up Ad Lib or Up With Assistance cannot be ordered

Admission or Transfer In: Place a mark if the patient has already arrived on the unit during the day shift, or if it is known that a patient is to arrive on the unit during the day shift. If indicators of the patient to arrive are known, then they should be recorded. This may apply to patient care areas that are receiving patients from the Operating Room, PAR, or from Surgical Intensive Care.

Discharge or Transfer Out: Mark this indicator if patient is certain to be discharged or transferred from the unit during the day shift.

Less Than 2 Years Old: Self explanatory. Refers to the needs related to growth and development.

2 – 6 Years Old: Self explanatory. Refers to the needs related to growth and development.

Unconscious: Applies to the patient who is unconscious. Does not include lethargic or stuporous patients. The patient's basic care should not be listed as up ad lib or up with assistance. Special Teaching Needs and Special Emotional Needs would also be erroneous in this situation unless directed toward the family.

Confused, Retarded or Disoriented: Applies to the patients who are confused (unable to follow commands, care for self, etc.), disoriented (as to time and place) or retarded (mental age significantly below chronologic age). Does not apply to the unconscious patient.

Blind or Nearly Blind: Place a mark if patient relies on nursing for needs due to blindness. This should also be marked for the patient with eye patches which result in the patient requiring nursing assistance; e.g. post-op cataract. Do not mark if patient is unconscious.

Isolation/Isolette: Applies to the patient requiring medical aseptic and protective care. Also refers to the infant requiring a controlled environment; e.g. incubator.

Partial Immobility: Place a mark for patients partially immobilized as a result of IV's, cast, splint, traction, restraints, arthritis, etc., which lead to dependence on nursing for assistance with routine activities. Do not routinely check for infants.

Complete Immobility: Place a mark for the patient with a high degree of immobility or the patient with complete immobility. These are patients wo are incapable of participation in most activities, such as turning and moving. Do not routinely check for infants. Examples are the quadraplegic or uriconscious patient.

Respirator: If this is checked, oxygen therapy category must be checked.

Tracheostomy: Place a mark for any patient who has a tracheostomy or an endotrach. Also mark tube care, under therapeutic needs, if patient relies upon nursing for care of tube.

Incontinent of Bowel or Bladder/Diaphoretic: Refers to patient who is incontinent of urine or feces. Does not need to be marked if patient has indwelling catheter. Also applies to patient with extreme diaphoresis or patient under high humidity tent who requires linen to be changed frequently (at least two times per shift). Does not routinely apply to infants who are not yet toilet trained.

The next three indicators: Up Ad Lib; Up With Assistance; and Bed Rest, refer to the activity level of a patient. One of these three indicators is to be checked for each patient classified.

Up Ad Lib: Self explanatory. Up With Assistance or Bed Rest cannot be checked if Up Ad Lib is checked.

Up With Assistance: Self explanatory. Bed Rest or Up Ad Lib cannot be checked if Up With Assistance is checked.

Bed Rest: Check if patient is restricted to bed without bathroom privileges. Includes all infants. Up Ad Lib or Up With Assistance cannot be checked if

SURGERY– DEFINITIONS OF INDICATORS

Bath With Assistance: Check for patient needing help with (1) setting up bath equipment and/or (2) washing small areas of body; e.g., back. Also includes patients needing supervision during bath; e.g., child in tub.

Bath Total: Includes patients needing entire bath or patients who are only able to bathe small areas of the body; e.g., face, hands, and genitalia.

Oral/Tube Feed With Assistance: Place a mark if patient requires tray or tube feeding to be set up by nursing personnel. Patient is then capable of feeding self or administering own tube feeding with minimal supervision.

Oral/Tube Feed Total: Place check mark if patient is unable to feed self. It is also appropriate to check this column if patient requires constant supervision during the meal.

Intake and Output: Place a mark if patient requires recording of Intake or Output or both.

Specimen Collection: Place a mark if patient requires specimen collection by nursing, whether the specimen is sent to a laboratory or used on the unit (e.g., urine for specific gravity or fractional urines). This column is not marked if specimen is not obtained by unit personnel (e.g., blood work drawn by the lab).

Tube Care: Place a mark if patient needs assistance with tubes; e.g., suction for trach, cleaning trach tube, irrigating and aspirating nasogastric tube, irrigating Foley catheters, or pericare for patients with Foley catheters.

Extensive Wound and/or Skin Care: This indicator includes those patients with extensive burns, excoriations, or dermatological problems requiring extensive care (e.g., dressing that takes 1-1½ hours q.i.d.).

Wound and/or Simple Skin Care: This indicator includes those patients requiring close observation or basic skin care of wound or operative site or those patients prone to decubiti who are receiving preventative skin care. IV site care is not included. Do not check for routine A.M. and/or P.M. care.

Oxygen Therapy: Place a mark if patient is to receive any oxygen therapy, heated aerosol, high humidity tent, IPPB, nasal 0_2, sporometer, etc. This applies if nursing must be aware of, or directly responsible for, the oxygen therapy.

Monitoring: Refers to patients being mechanically monitored as well as those patients requiring frequent visual observation Q15 minutes or more often (e.g., psychiatric or retarded patient, patient being weaned from a ventilator, patients on medicated IV drips which require very close monitoring). Do not routinely check for infants and children.

Vital Signs Q 2 Hours or More Often: Place a mark for patients requiring monitoring of vital signs, Q 2 hours or more often. Vital signs include, TPR, BP, CVP monitoring, neuro signs, and extremity pulses, etc.

IV's and Site Care: Self explanatory. Includes A–V shunts, T.P.N., arterial and central lines, heparin locks.

Special Teaching Needs: Place a mark if patient and/or family requires special instructions; e.g., diabetic teaching, pre and specific post-op teaching. This does not include routine admission instructions, familiarization with environment, or instructions for laboratory tests unless the patient and/or family exhibit difficulties in following instructions.

Special Emotional Needs: Place a mark for patients and for families needing additional emotional support because they are experiencing stress beyond the usual stress of hospitalization, are having difficulty coping, are unable to cope, or are exhibiting inappropriate behavior (e.g., expressing suicidal ideations, highly withdrawn, aggressiveness). If this item is checked, the emotional needs should be documented in Nursing Assessment and Plan.

Prepared for Tests and/or Procedures: Place a mark if patient requires preparation by nursing during this shift for a test or a procedure; e.g., surgery, prepara-

DATE: CATARACTS

PATIENT CLASSIFICATION FORM

UNIT:	CONDITIONS													BASIC CARE							THERAPEUTIC NEEDS														
PATIENTS NAME	Admission or Transfer in	Discharge or Transfer Out	Less Than 2Years Old	2 - 6 Yrs. Old	Unconscious	Confused/Retrd or Disoriented	Blind or Nearly Blind	Isolation/Isolette	Partial Immobility	Complete Immobility	Respirator	Tracheostomy	Incontinent/ Diaphoretic	Up Ad Lib	Up With Assistance	Bed Rest	Bath With Assistance	Bath Total	Assistance With Oral/Tube Feed	Total Oral/Tube Feed	I & O	Specimen Collection	Tube Care	Extensive Skin Care	Wound and /or Simple Skin Care	Oxygen Therapy	Monitoring	Vital Signs Q2 Hrs. or More Often	IV's and Site Care	Special Teaching Needs	Special Emotional Needs	Prep'd For Test and/or Proc.	Total Points	Patient Type
DAY ADMITTED	X						X							X								X										20	I
IMMEDIATELY POST-OP							X									X	X		X						X			X	X	X		72	III
EVENING POST-OP							X									X	X								X					X		45	II
DAY AFTER SURGERY							X								X		X								X					X		40	II

Form Reviewed By: _____ R.N. Please indicate time form completed _____

UH-423 (3/79)

Bed Rest: Check if patient is [illegible]. Includes all infants. Up Ad Lib or Up With Assistance cannot be checked if

Admission or Transfer In: Place a mark if the patient has already arrived on the unit during the day shift, or if it is known that a patient is to arrive on the unit during the day shift. If indicators of the patient to arrive are known, then they should be recorded. This may apply to patient care areas that are receiving patients from the Operating Room, PAR, or from Surgical Intensive Care.

Discharge or Transfer Out: Mark this indicator if patient is certain to be discharged or transferred from the unit during the day shift.

Less Than 2 Years Old: Self explanatory. Refers to the needs related to growth and development.

2 – 6 Years Old: Self explanatory. Refers to the needs related to growth and development.

Unconscious: Applies to the patient who is unconscious. Does not include lethargic or stuporous patients. The patient's basic care should not be listed as up ad lib or up with assistance. Special Teaching Needs and Special Emotional Needs would also be erroneous in this situation unless directed toward the family.

Confused, Retarded or Disoriented: Applies to the patients who are confused (unable to follow commands, care for self, etc.), disoriented (as to time and place) or retarded (mental age significantly below chronologic age). Does not apply to the unconscious patient.

Blind or Nearly Blind: Place a mark if patient relies on nursing for needs due to blindness. This should also be marked for the patient with eye patches which result in the patient requiring nursing assistance; e.g. post-op cataract. Do not mark if patient is unconscious.

Isolation/Isolette: Applies to the patient requiring medical aseptic and protective care. Also refers to the infant requiring a controlled environment; e.g. incubator.

Partial Immobility: Place a mark for patients partially immobilized as a result of IV's, cast, splint, traction, restraints, arthritis, etc., which lead to dependence on nursing for assistance with routine activities. Do not routinely check for infants.

Complete Immobility: Place a mark for the patient with a high degree of immobility or the patient with complete immobility. These are patients wo are incapable of participation in most activities, such as turning and moving. Do not routinely check for infants. Examples are the quadraplegic or unconscious patient.

Respirator: If this is checked, oxygen therapy category must be checked.

Tracheostomy: Place a mark for any patient who has a tracheostomy or an endotrach. Also mark tube care, under therapeutic needs, if patient relies upon nursing for care of tube.

Incontinent of Bowel or Bladder/Diaphoretic: Refers to patient who is incontinent of urine or feces. Does not need to be marked if patient has indwelling catheter. Also applies to patient with extreme diaphoresis or patient under high humidity tent who requires linen to be changed frequently (at least two times per shift). Does not routinely apply to infants who are not yet toilet trained.

The next three indicators: Up Ad Lib; Up With Assistance; and Bed Rest, refer to the activity level of a patient. One of these three indicators is to be checked for each patient classified.

Up Ad Lib: Self explanatory. Up With Assistance or Bed Rest cannot be checked if Up Ad Lib is checked.

Up With Assistance: Self explanatory. Bed Rest or Up Ad Lib cannot be checked if Up With Assistance is checked.

Bed Rest: Check if patient is restricted to bed without bathroom privileges. Includes all infants. Up Ad Lib or Up With Assistance cannot be checked if

SURGERY– DEFINITIONS OF INDICATORS

Bath With Assistance: Check for patient needing help with (1) setting up bath equipment and/or (2) washing small areas of body; e.g., back. Also includes patients needing supervision during bath; e.g., child in tub.

Bath Total: Includes patients needing entire bath or patients who are only able to bathe small areas of the body; e.g., face, hands, and genitalia.

Oral/Tube Feed With Assistance: Place a mark if patient requires tray or tube feeding to be set up by nursing personnel. Patient is then capable of feeding self or administering own tube feeding with minimal supervision.

Oral/Tube Feed Total: Place check mark if patient is unable to feed self. It is also appropriate to check this column if patient requires constant supervision during the meal.

Intake and Output: Place a mark if patient requires recording of Intake or Output or both.

Specimen Collection: Place a mark if patient requires specimen collection by nursing, whether the specimen is sent to a laboratory or used on the unit (e.g., urine for specific gravity or fractional urines). This column is not marked if specimen is not obtained by unit personnel (e.g., blood work drawn by the lab).

Tube Care: Place a mark if patient needs assistance with tubes; e.g., suction for trach, cleaning trach tube, irrigating and aspirating nasogastric tube, irrigating Foley catheters, or pericare for patients with Foley catheters.

Extensive Wound and/or Skin Care: This indicator includes those patients with extensive burns, excoriations, or dermatological problems requiring extensive care (e.g., dressing that takes 1-1½ hours q.i.d.).

Wound and/or Simple Skin Care: This indicator includes those patients requiring close observation or basic skin care of wound or operative site or those patients prone to decubiti who are receiving preventative skin care. IV site care is not included. Do not check for routine A.M. and/or P.M. care.

Oxygen Therapy: Place a mark if patient is to receive any oxygen therapy, heated aerosol, high humidity tent, IPPB, nasal O_2, sporometer, etc. This applies if nursing must be aware of, or directly responsible for, the oxygen therapy.

Monitoring: Refers to patients being mechanically monitored as well as those patients requiring frequent visual observation Q15 minutes or more often (e.g., psychiatric or retarded patient, patient being weaned from a ventilator, patients on medicated IV drips which require very close monitoring). Do not routinely check for infants and children.

Vital Signs Q 2 Hours or More Often: Place a mark for patients requiring monitoring of vital signs, Q 2 hours or more often. Vital signs include, TPR, BP, CVP monitoring, neuro signs, and extremity pulses, etc.

IV's and Site Care: Self explanatory. Includes A–V shunts, T.P.N., arterial and central lines, heparin locks.

Special Teaching Needs: Place a mark if patient and/or family requires special instructions; e.g., diabetic teaching, pre and specific post-op teaching. This does not include routine admission instructions, familiarization with environment, or instructions for laboratory tests unless the patient and/or family exhibit difficulties in following instructions.

Special Emotional Needs: Place a mark for patients and for families needing additional emotional support because they are experiencing stress beyond the usual stress of hospitalization, are having difficulty coping, are unable to cope, or are exhibiting inappropriate behavior (e.g., expressing suicidal ideations, highly withdrawn, aggressiveness). If this item is checked, the emotional needs should be documented in Nursing Assessment and Plan.

Prepared for Tests and/or Procedures: Place a mark if patient requires preparation by nursing during this shift for a test or a procedure; e.g., surgery, preparation for endoscopy.

DATE: HAEMORRHOIDS

PATIENT CLASSIFICATION FORM

UNIT:	CONDITIONS													BASIC CARE							THERAPEUTIC NEEDS														
PATIENTS NAME	Admission or Transfer in	Discharge or Transfer Out	Less Than 2Years Old	2 - 6 Yrs. Old	Unconscious	Confused/Retrd or Disoriented	Blind or Nearly Blind	Isolation/Isolette	Partial Immobility	Complete Immobility	Respirator	Tracheostomy	Incontinent/ Diaphoretic	Up Ad Lib	Up With Assistance	Bed Rest	Bath With Assistance	Bath Total	Assistance With Oral/Tube Feed	Total Oral/Tube Feed	I & O	Specimen Collection	Tube Care	Extensive Skin Care	Wound and /or Simple Skin Care	Oxygen Therapy	Monitoring	Vital Signs Q2 Hrs. or More Often	IV's and Site Care	Special Teaching Needs	Special Emotional Needs	Prep'd For Test and/or Proc.	Total Points	Patient Type
DAY ADMITTED	X													X			X					X			X					X		X	31	II
IMMEDIATELY POST-OP									X							X		X			X				X	X		X	X				63	III
EVENING POST-OP															X										X								13	I
DAY AFTER SURGERY														X			X								X								11	II

Form Reviewed By: _____ R.N. Please indicate time form completed _____

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Includes all infants: Up Ad Lib or Up With Assistance

Admission or Transfer In: Place a mark if the patient has already arrived on the unit during the day shift, or if it is known that a patient is to arrive on the unit during the day shift. If indicators of the patient to arrive are known, then they should be recorded. This may apply to patient care areas that are receiving patients from the Operating Room, PAR, or from Surgical Intensive Care.

Discharge or Transfer Out: Mark this indicator if patient is certain to be discharged or transferred from the unit during the day shift.

Less Than 2 Years Old: Self explanatory. Refers to the needs related to growth and development.

2 – 6 Years Old: Self explanatory. Refers to the needs related to growth and development.

Unconscious: Applies to the patient who is unconscious. Does not include lethargic or stuporous patients. The patient's basic care should not be listed as up ad lib or up with assistance. Special Teaching Needs and Special Emotional Needs would also be erroneous in this situation unless directed toward the family.

Confused, Retarded or Disoriented: Applies to the patients who are confused (unable to follow commands, care for self, etc.), disoriented (as to time and place) or retarded (mental age significantly below chronologic age). Does not apply to the unconscious patient.

Blind or Nearly Blind: Place a mark if patient relies on nursing for needs due to blindness. This should also be marked for the patient with eye patches which result in the patient requiring nursing assistance; e.g. post-op cataract. Do not mark if patient is unconscious.

Isolation/Isolette: Applies to the patient requiring medical aseptic and protective care. Also refers to the infant requiring a controlled environment; e.g. incubator.

Partial Immobility: Place a mark for patients partially immobilized as a result of IV's, cast, splint, traction, restraints, arthritis, etc., which lead to dependence on nursing for assistance with routine activities. Do not routinely check for infants.

Complete Immobility: Place a mark for the patient with a high degree of immobility or the patient with complete immobility. These are patients wo are incapable of participation in most activities, such as turning and moving. Do not routinely check for infants. Examples are the quadraplegic or unconscious patient.

Respirator: If this is checked, oxygen therapy category must be checked.

Tracheostomy: Place a mark for any patient who has a tracheostomy or an endotrach. Also mark tube care, under therapeutic needs, if patient relies upon nursing for care of tube.

Incontinent of Bowel or Bladder/Diaphoretic: Refers to patient who is incontinent of urine or feces. Does not need to be marked if patient has indwelling catheter. Also applies to patient with extreme diaphoresis or patient under high humidity tent who requires linen to be changed frequently (at least two times per shift). Does not routinely apply to infants who are not yet toilet trained.

The next three indicators: Up Ad Lib; Up With Assistance; and Bed Rest, refer to the activity level of a patient. One of these three indicators is to be checked for each patient classified.

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Up With Assistance: Self explanatory. Bed Rest or Up Ad Lib cannot be checked if Up With Assistance is checked.

Bed Rest: Check if patient is restricted to bed without bathroom privileges. Includes all infants. Up Ad Lib or Up With Assistance cannot be checked if Bed Rest is checked.

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Prepared for Tests and/or Procedures; Place a mark if patient requires preparation by nursing during this shift for a test or a procedure; e.g., surgery, preparation for endoscopy.

Shelby Karpman

Mr. Karpman was born and raised in Montreal, Quebec. After attending elementary and high school in Montreal, he received his D.C.S. from Dawson College in 1977. That same year he entered McGill University and graduated with his Bachelor of Science in the Anatomical Sciences in June of 1980. In September of 1980, he entered the Health Administration Program at the University of Ottawa and will graduate with his Master of Health Administration in June of 1982.

Throughout his university years, Mr. Karpman has been active in the student councils. He also has a wide range of professional experience, including his residency at the University of Alberta Hospital in Edmonton, Alberta which was done in the summer of 1981.