# Establishment and cost analysis of an office surgical suite

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The objective of this study was to show that minor operative procedures done in a nonhospital setting can be provided more efficiently than those done in hospital and are agreeable to both patient and surgeon. A description of the facility, equipment required and types of procedures that can be performed provides a guide for other surgeons who may wish to establish an office surgical suite. The senior author's experience from 1993 to 1995 is described. Costs were compared on a procedure basis from financial data obtained from the practice and from a local 400-bed community hospital.

Experience shows that patients are receptive to undergoing minor procedures outside the traditional hospital setting. An office surgical suite allows the surgeon greater flexibility in work scheduling, thereby improving productivity. The cost per case appears to be less in the office than in the hospital for the particular costs identified. The current method of funding minor surgical procedures provides an incentive to the surgeon to perform these procedures in hospital, because the individual practitioner is not responsible for any operating expenses. Thus, if costs are to be reduced and quality maintained, funding mechanisms must be reformed to allow less costly service to evolve.

Cette étude visait à démontrer que les interventions mineures effectuées en milieu non hospitalier peuvent être exécutées de façon plus efficiente qu'en milieu hospitalier et sont agréables à la fois pour le patient et pour le chirurgien. Une description de l'installation, du matériel requis et des types d'interventions qui peuvent être exécutées guide les chirurgiens qui pourraient souhaiter établir un service de chirurgie à leur cabinet. L'article décrit l'expérience que l'auteur principal a vécue de 1993 à 1995. On a comparé les coûts de chaque intervention à partir de données financières obtenues du cabinet et d'un hôpital communautaire local de 400 lits.

L'expérience démontre que les patients sont prêts à subir des interventions mineures en dehors du milieu hospitalier classique. En offrant un service de chirurgie à son cabinet, le chirurgien peut organiser son travail avec plus de souplesse, ce qui améliore la productivité. Le coût par cas semble moins élevé au cabinet qu'à l'hôpital dans le cas des coûts particuliers définis. La méthode actuelle de financement des interventions chirurgicales mineures incite le chirurgien à les exécuter à l'hôpital parce qu'il n'assume aucune des dépenses liées à l'intervention. Si l'on veut réduire les coûts et maintenir la qualité, il faut réformer les mécanismes de financement pour permettre l'apparition de services moins coûteux.

In 1991, an outpatient surgical suite was established in the senior author's (J.C.W.) office to perform minor operative procedures. We believed that certain types of procedure could be done as safely and effectively and more efficiently than in the hospital, while providing the patient an accessible, convenient and comfortable service and an enhanced working environment for the surgeon.

Several regional and national reports[1,2] have recently supported the notion that some traditionally hospital-based services can be provided more efficiently and effectively in the nonhospital setting. A recently published national report[1] indicates that public

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health expenditures in Canada could be reduced by as much as 15% if less costly forms of treatment and treatment settings were substituted for current methods of health care delivery. The report concluded that these changes can be made without altering the outcome or sacrificing quality of care. The Rainbow Report[2] from Alberta also advocated the substitution of institutional care with less expensive community-based programs.

The need to move from rhetoric to reality in the development and implementation of more efficient health delivery systems has become paramount in Alberta in recent years. In an effort to balance its budget, the provincial government has reduced spending in health care by 20% over 2 years. Large urban hospitals have borne the brunt of these funding cuts, and regional health authorities are actively investigating less expensive ways of providing services that have traditionally been provided in the hospital setting.

In this paper we describe the space, equipment and operational procedures required for the establishment and operation of an office minor surgical suite. We discuss the perceived benefits to the surgeon and the patient of having this service available. A breakdown of the number and types of procedures performed over the past 2 years is also outlined. We carried out a detailed cost-revenue analysis to determine if financial incentives are sufficient to encourage other surgeons to establish similar facilities, and we compare costs in the office setting with operating costs for minor procedures in the hospital setting to identify any financial advantages to the health care delivery system of providing this service in a nonhospital setting.

## Methods

To determine surgical suite expenses we reviewed the accounts to find a method of allocating costs to this area. Some items were entirely associated with the surgical suite and therefore were allocated on a 100% basis. Rental expense was allocated as a percentage of the total office area, and other general overheads were based on total services rendered in the surgical suite as a proportion of the total workload of the practice. Medical supplies were allocated using varying percentages, which depended on the rate of use in the surgical suite.

The following formulas were used in the cost-revenue analysis:

- cost per procedure = total expenses/total number of services rendered
- average fee = total revenue/total number of services rendered
- fixed costs = all allocated surgical suite costs with the exception of a nursing assistant's (RNA's) salary, RNA's payroll expenses (unemployment insurance and Canada Pension Plan) and medical supplies
- variable costs = (RNA's) salary, RNA's payroll expenses and medical supplies.

## Results

### Space

The minor surgical suite measures 3 by 5.3 m and represents 15% of the total office area. This room is dedicated and is not used for any other purpose. Counter space, cupboards and a double sink are located against one long wall, with the stretcher and utility cart located against the opposite wall. A tool chest with a sterilizer

**Table I**

**Minor Surgical Procedures Performed in the Surgeon's Office**

| | Year | |
|---|---|---|
| Procedure | 1993/94 | 1994/95 |
| Sigmoidoscopy | 117 | 116 |
| Vasectomy | 69 | 83 |
| Biopsy of | | |
| Breast | 199 | 200 |
| Node | 18 | 5 |
| Skin | 56 | 64 |
| Excision of | | |
| Lipoma | 110 | 97 |
| Cyst | 91 | 78 |
| Pilonidal sinus | 19 | 14 |
| Warts | 0 | 15 |
| Scar | 0 | 4 |
| Removal of | | |
| Toenail | 3 | 4 |
| Foreign body | 20 | 12 |
| Anal procedure | 5 | 2 |
| Incision and drainage | 25 | 21 |
| Total | 732 | 715 |

mounted on top is located on the far wall. The light source is mounted on the wall beside the stretcher and swivels to allow proper placement. Resuscitation equipment is available if needed.

### Operational procedures

The minor surgical suite is used, on average, 3 days a week and approximately six operative procedures are performed each day. The procedures are interspersed throughout the day to allow time for clean-up, necessary paperwork, patient instruction and preparation for the next case. Between cases, the surgeon is free to see other patients for consultation. A part-time RNA (0.6 full-time equivalent) is employed to manage all aspects of the room. This employee cleans, maintains inventory and orders all equipment and supplies. In addition, she (or he) prepares the patient, assists with the procedure as required and provides pre- and postoperative instructions. Biopsy specimens are processed and picked up by a private medical laboratory service for analysis. A computer terminal is present in the suite so that all follow-up appointments can be booked directly and statistical information entered immediately.

### Procedures performed

Table I lists the number and type of procedures performed over the last 2 years. The workload from the minor surgical suite represented approximately 13% of the total workload for 1993/94 and 1994/95 in terms of the total number of services rendered. The Canadian Medical Protective Association has no medicolegal concerns about the performance of these procedures in an office setting because only local freezing is used. Insurance premiums are also not affected.

### Capital equipment

Necessary equipment and instruments required for the surgical suite are described in Table II. The total cost of medical equipment required to establish the surgical suite is approximately $24 212.

### Cost-revenue analysis

Table III summarizes the financial indicators from the past 2 years for the office surgical suite. Total revenue accruing to the surgical suite was calculated by identifying the appropriate surgical codes from the records. All remuneration for these procedures is provided by the provincial health insurance plan and may consist of a procedural, tray and office visit fee. For

**Table II**

**Equipment Needed to Set Up Office Minor Surgical Suite**

| Major equipment | Resuscitation equipment | Instrument packs (5) | Other instruments | Other equipment |
|---|---|---|---|---|
| Stretcher | Ambubag: intravenous setup — saline, tubing, Angiocaths, butterfly needles | Metal tray | Weitliner retractor | Stethoscope |
| Armboard | Oxygen: medications — atropine, adrenaline, valium, Benadryl, dextrose | Drapes | Lahey tenaculum | Blood pressure cuff |
| Sterilizer | Oral airways: endotracheal tubes | Sponges | No-scalpel vasectomy instruments | Flashlight |
| Flexible sigmoidoscope | Yaunker sucker | Iodine cup (× 2) | Senns retractor | Telephone |
| Electrosurgical unit | Tourniquet | Towel clip | Curette | Fire extinguisher |
| Mayo stand | | Allis clamp | | Exhaust fan |
| Tool chest | | Hemostat — straight, curved | | |
| Stools: sitting, foot | | Scissors — straight, curved | | |
| Suction machine | | Adsen forceps | | |
| Halogen lamp | | Needle driver | | |
| | | Scalpel handle | | |

example, when the procedure is carried out in the office, the surgeon can bill a tray fee of either $7.71 (for minor procedures) or $22.83 (for major procedures). Certain procedures allow an office visit ($22.13) to be billed also. If the procedure was performed in the hospital, the same procedural fee would be billed. No extra-billing or facility fees are charged to the patient.

Table IV gives a breakdown of all direct and allocated costs of the minor surgical suite by expense category for 1 year.

### Efficiency of office versus hospital minor surgical suite

We attempted to calculate and compare the cost of providing a similar service in the hospital to determine if it is more or less efficient in the office setting. Because of different accounting systems, not all relevant hospital costs are captured in the hospital's minor surgical suite cost centre, making a direct cost comparison difficult. Overhead expenses, such as drugs, heat, light, maintenance, housekeeping, central sterile supply, capital equipment depreciation and cost of space are not included in the hospital expense figures. To provide a more direct comparison, cost per procedure for the office surgical suite was recalculated, allocating 80% of the RNA's salary (for direct patient care only) and medical supply costs, excluding drugs. The office surgical suite cost per case dropped to $28.12 for 1994/95 compared with $33.79 for the hospital cost.

### Internal efficiency of the office surgical suite

The office surgical suite was initially established for the surgeon's convenience and to provide an enhanced service for the patient. Efficiency was not one of the main criteria for establishing this service; therefore, a fixed cost per case of $23.09 is quite high. At present, six procedures are carried out at intervals during a single day, and the facility and equipment lie idle for 2 days per week. If this suite was in use 5 days a week and procedures were booked in 30-minute time slots with a 15-minute turnaround time, the increased number of procedures would significantly reduce fixed costs. Assuming a 250-day workyear and 10 procedures per 7.5-hour workday, a total of 2500 procedures could be carried out annually. Given that variable costs per case are $33.85 and fixed costs per year are $16 509.95, then total expenses would be $101 135.95 (2500 procedures at $33.85 plus $16 509.95) or $40.45 per case. This figure is substantially lower than the current cost per case of $56.94. Fixed costs per case would drop to $6.60 from $23.09.

## Discussion

The availability of a minor surgical suite in the office allows the surgeon

**Table III**

**Summary of Financial Indicators (Numbers in Dollars)**

| | Year | |
|---|---|---|
| Indicator | 1993/94 ($n$ = 732) | 1994/95 ($n$ = 715) |
| Total remuneration | 72 242.00 | 82 999.77 |
| Total expenses | 38 183.57 | 40 714.21 |
| Fixed | 15 441.95 | 16 509.95 |
| Variable | 22 741.62 | 24 204.26 |
| Net income | 34 058.46 | 42 285.56 |
| Cost per procedure | 52.16 | 56.94 |
| Fixed | 21.10 | 23.09 |
| Variable | 31.07 | 33.85 |
| Average fee per procedure | 98.69 | 116.08 |
| Net income per procedure | 46.53 | 59.14 |

**Table IV**

**Operating Costs (in Dollars) by Expense Category**

| | Year | |
|---|---|---|
| Expense category | 1993/94 | 1994/95 |
| Office | 4 590 | 5 533 |
| Computer | 321 | 718 |
| Depreciation | 3 386 | 2 808 |
| Registered nursing assistant salary and payroll expenses | 14 594 | 14 559 |
| Allocated office salary | 4 800 | 4 800 |
| Insurance | 841 | 949 |
| Medical supplies | 8 147 | 9 645 |
| Other | 1 503 | 1 301 |
| Total | 38 184 | 40 714 |

unrestricted and unlimited operative time for minor procedures. These can be booked at the convenience of the surgeon and patient without concern for operating-room availability. The surgeon is in control of all procedures and protocols, and this eliminates some of the difficulties and frustrations of working in a hospital setting.

Although the evidence is anecdotal, patients seem to be receptive to having procedures done in a nonhospital setting. More comfortable, less intimidating surroundings have resulted in positive feedback from patients about their experience. The number of referrals has increased over the years as physicians have become aware of this facility.

The results show that costs per case would be higher in an office surgical suite than in a facility that is not fully utilized as, for example, at a free-standing surgical centre. Therefore it may be more beneficial for the surgeon in such a case to book space in a surgical centre 1 day a week instead of having a surgical suite in the office. Although it is difficult to verify empirically, the office surgical suite allows the surgeon to generate more revenue by being more efficient and productive. The $16.49 per case difference in fixed costs between the surgical centre and the office is easily made up by billable work done in what would otherwise be idle changover time between cases in the surgical centre. The proximity of the surgical suite eliminates travel time to and from the hospital and allows the surgeon time to see other patients or do paperwork between cases, leading to a more efficient workday. A greater number of procedures can be done per week in the office setting than in the hospital; therefore, waiting times for patients can be reduced.

It was difficult to determine whether a community-based minor surgical suite service was provided less expensively than one in a hospital environment because of the difficulty in accurately accounting for the "actual" cost of performing a minor operative procedure in the hospital setting. The hospital could only account for nursing salary costs and medical supplies (excluding drugs). Nevertheless, a comparison of these costs showed that the office surgical suite costs per case were lower than the hospital cost per case by $5.67. The results appear to confirm what one would intuitively expect: that minor procedures carried out in a community-based setting, such as a doctor's office, are less expensive than those performed in a hospital.

Although the provision of minor operative procedures in the community setting appears to be more efficient than in the hospital setting, the question remains whether the office surgical suite described here provides enough financial incentive to encourage others to establish similar facilities. The procedure cost was $56.94. However, the tray fee reimbursed by the provincial health insurance plan of $7.71 for a minor procedure and $22.83 for a major procedure clearly does not adequately compensate a surgeon for providing this service in a nonhospital setting. Net income for 1994/95 was $42 285.56 for 715 cases ($59.14 per case). Although a surgeon may generate additional revenue from increased productivity in the office surgical suite, this is difficult to quantify. Nevertheless, some may consider these net income figures insufficient incentive, or even a disincentive, to duplicate the service, because a surgeon performing minor surgery in the hospital would not be responsible for any expenses incurred and would therefore receive net income of $116.08 per case, instead of $59.14 and would only have to perform 304 procedures to produce the same net income.

From the perspective of the health care system in Alberta, perhaps the most efficient means of providing minor surgery service is to contract this service to a free-standing clinic that can be accessed by many surgeons and operates 5 or more days per week. The health system in Alberta wuld need to reallocate funding from the hospital side to free-standing clinics to provide a reasonable "tray and facility fee," which would cover some of the overheads. The current tray fee clearly does not begin to cover the cost of providing the service delivered in an office setting or a surgical centre setting in an equitable way. These fees, once established, should be available to surgeons who choose to set up a suite in the office.

## Conclusions

The provision of minor surgical services in an office setting is a viable alternative to the hospital setting from both the surgeon's and the patient's perspective. Although it has been shown that services can be provided less expensively in an office setting, the current funding system provides a financial incentive to the surgeon to perform these services in a more costly environment. Governments and regional health authorities must review how the system is funded and make the appropriate changes if positive reform of our health delivery system is to take place.

## References

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2. Premier's Commission on Future Health Care for Alberta. *The Rainbow Report: our vision for health.* Edmonton: The Commission, 1989.