Occasional Review

Pre-anesthetic assessment clinics in Ontario

David M. Bond MB BCHIR FRCPC

Purpose: To survey the provision of pre-anesthetic assessment clinics in hospitals in Ontario during the summer of 1997.

Methods: Mail survey questionnaire of all 300 hospitals in Ontario.

Results: Replies were received from 260 hospitals (86.7%) of which 131 provide anesthesia. Of these, 86% are community and 14% teaching hospitals. Regular clinics are held in 63% of these hospitals, most commonly daily. As to location, 73% are held in the outpatient department. Written guidelines detailing which patients should be referred are issued by 77% of departments. The attending surgeon is the most common source of referral (64%). Referred patients are most commonly seen by a nurse (52%) who decides on onward referral to an anesthesiologist. Services generating the most referrals are general surgery (83%), orthopedics (64%) and obstetrics/gynecology (49%). In 47% of hospitals 10-50 patients are seen per month and they travel most commonly up to 100 km. The average "no show" rate is 6.2%. Only 36% of departments assess patients the same day as seen by the surgeon. On attending the clinic, 51% can see an internist the same day in contrast to 30% being able to see a cardiologist. Pre-admission testing is available to 97% on the same day.

Direct funding is available for the nurse (87%), physician (1%) and secretarial help (43%). Remuneration of the anesthesiologist is fee for service (99%) and sessional (1%).

Conclusion: Pre-anesthetic assessment clinics are common in Ontario. More development is required to enable patients to receive all aspects of their preoperative assessment during one visit.

Objectif : Faire une enquête sur les cliniques d'évaluation pré-anesthésiques dans les hôpitaux de l'Ontario pendant l'été 1997.

Méthode : Questionnaire d'enquête posté aux 300 hôpitaux d'Ontario.

Résultats : Parmi les réponses reçues de 260 hôpitaux (86,7 %), 131 offrent l'anesthésie. De ces derniers, il y a 86 % d'hôpitaux publics et 14 % d'hôpitaux d'enseignement. Des cliniques régulières, quotidiennes en général, ont lieu dans 63 % de ces hôpitaux et se déroulent, pour 73 % d'entre elles, au service des consultations externes. Des recommandations écrites sont émises par 77 % des services et précisent, avec détails, comment orienter les patients. Le chirurgien traitant est celui qui oriente le plus souvent les patients vers un spécialiste (64 %). Ces patients sont vus en général par une infirmière (52 %) qui décide de les diriger vers l'anesthésiologiste. Les services qui reçoivent ainsi le plus de patients sont la chirurgie générale (83 %), l'orthopédie (64 %) et la gynécologie/obstétrique (49%). Dans 47 % des hôpitaux, chaque mois, de 10 à 50 patients parcourent le plus souvent jusqu'à 100 km pour consulter. Le pourcentage moyen de rendez-vous annulés est de 6,2 %. Dans 36 % seulement des services, on évalue les patients le même jour que le chirurgien. Parmi les patients qui se présentent à la clinique, 51 % peuvent être reçus le même jour par un interniste contre 30 % par un cardiologue. Les tests préalables à l'admission sont possibles le jour même dans 97 % des cas. Un financement direct est accessible pour les infirmières (87 %), les médecins (1 %) et les secrétaires (43 %). La rémunération des anesthésiologistes consiste en honoraires à l'acte (99 %) et à vacation (1 %).

Conclusion : Les cliniques d'évaluation pré-anesthésiques sont courantes en Ontario. Des améliorations demeurent nécessaires pour que le patient puisse recevoir une évaluation préopératoire complète en une seule visite.

From the Department of Anaesthesia, Queen's University, Kingston General Hospital, 76 Stuart Street, Kingston, ON K7L 2V7 Canada.

Address correspondence to: Dr. David M. Bond, MBC #22, King Faisal Specialist Hospital and Research Center, P.O. Box 3354, Riyadh 11211, Saudi Arabia. Phone: 966-1-464-7272, Ext. 32721/32723; Fax: 966-1-442-3909; E-mail: dmbond@hotmail.com

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IN an era of fiscal restraint the admission of surgical patients to hospital in advance of the day of elective surgery is considered expensive. Consultations and investigations can be arranged as an outpatient but this requires considerable organization to avoid repeated visits to the hospital. This study addresses the provision of pre-anesthetic assessment clinics in Ontario using the results of a mail questionnaire survey. With many hospitals reviewing their provision of pre-anesthetic preparation there is no published information describing what different hospitals have been doing. Therefore this study was designed to describe the anesthetic involvement in outpatient preparation for surgery in Ontario during the summer of 1997.

Methods

A trial questionnaire was mailed to ten anesthesiologists working in both community and teaching hospitals for criticism. Information from this preliminary mailing was incorporated into the final survey questionnaire (Appendix). The questions were designed to elicit information concerning the existence, frequency and procedures of preanesthetic clinics. This was mailed to all 300 hospitals in Ontario addressed to the chairman of the anesthesia department. A reply was requested even if the hospital did not provide anesthesia. Mailings were followed one week later by a postcard reminder to return the completed questionnaire. Six weeks later a second questionnaire was sent to non-responders. The design and follow up used in this survey has been described by Dillman.¹

Results were collated on a spreadsheet (Microsoft Excel).

Results

Questionnaires were mailed to 300 hospitals and information was obtained from 260 (86.7%). Of

these, 131 provide anesthesia and 129 do not. Most, 86%, of the replies were from locations providing anesthesia in community hospitals and 14% from teaching establishments in which anesthetic residents are trained. The complete data set is available on disc from the author.

Discussion

Pre-anesthetic assessment clinics are provided in 63% of responding hospitals. The attending surgeon is the most common source of referral (64%) leading most often to evaluation by a nurse (52%) who decides on onward referral to an anesthesiologist. The services generating the most referrals are general surgery (83%), orthopedics (64%) and obstetrics/gynecology (49%).

Frost reported the use of consultation clinics in anesthesia.² This study did not relate to formal consultation clinics but rather the provision of an anesthetic opinion on the majority of patients presenting for elective surgery. The response rate of 86.7% is satisfactory for this type of study and is a representative sample.

Less than 20% of elective surgery is inpatient which is similar to recent data from the United States² and agrees with the prediction of Conway *et al.* in 1992 in Canada.³ Regular pre-anesthetic assessment clinics are held in 63% of hospitals. A further seven hospitals plan to start a clinic within the next year. Smaller hospitals (Table I) are less likely to have clinics and this probably reflects fewer personnel to cover all commitments. Large community hospitals (>10,000 OR cases/year) hold clinics in 92% of cases. Interestingly, they are not yet as common (78%) in teaching hospitals.

Daily clinics are the most common option. The prospect of same day admission preoperatively (same day admission) generally suggests a more extensive procedure than plans for discharge home (day surgery). This perception is reflected in 54% of insti-

TABLE I Hospitals surveyed

	<i>Teaching</i>		<i>Non-Teaching</i>		<i>TOTAL</i>
Hospitals surveyed	18		282		300
Replies	18		242		260
Anesthetic services	18		113		131
OR cases/year (average)	13,200	>10,000	1-10,000	<1000	
Complete data*	18	12	53	39	122
Clinic	14	11	38	20	83
Clinic (%)	78	92	72	51	
<i>Percentages seen:</i>					
Inpatient	19	15	17	23	
Outpatient/Outpatient	51	70	65	66	
Outpatient/Inpatient	30	15	18	11	

* 9 incomplete data sets not included in analysis.

TABLE II Clinic details

	<i>n</i>	%
<i>Frequency</i>		
Daily	48	52
Weekly	36	39
BiWeekly	6	7
Monthly	0	0
<i>Endeavour to assess</i>		
All OP/OP	35	38
All OP/IP	50	54
Some OP/OP	50	54
Some OP/IP	42	46
<i>Location</i>		
Outpatient Dept.	67	73
Anesthetic Dept.	3	3
Other	20	22
<i>Guidelines</i>		
Referral required	59	77
Referral not required	18	23
<i>Selection</i>		
Surgeon	47	64
Questionnaire	20	27
Internist	1	14
FP	2	2
<i>Seen By:</i>		
Nurse	48	52
Specialist	33	36
FP	10	11
Other	1	1
<i>Same day assessment</i>		
Surgeon	32	36
Internist	46	51
Cardiologist	27	30
Pre-anesthetic testing	87	97
<i>Funding</i>		
Nurse	76	87
Physician	1	1
Secretary	37	43
<i>Anesthesiologist remuneration</i>		
Fee for service	79	99
Sessional	1	1
<i>Cardiac surgical service</i>		
Same day admission	7	88
Seen in PAC	7	88

tutions endeavouring to assess all same day admission patients compared with 38% of day surgery patients.

The outpatient department is the most common location for these clinics but 22% of departments use a facility outside the outpatient and anesthetic departments. In 90% of these institutions this is a dedicated day surgery assessment area. Rudkin *et al.* emphasized the importance of an area centralizing all aspects of preoperative preparation.⁴ They also noted the requirement for anesthesiologists with interest and expertise in streamlining preoperative preparation.

Surprisingly, only 77% of departments issue written guidelines regarding which patients should be referred

TABLE III Characteristics of Patients Attending Clinic

	<i>n</i>	%
<i>Services referred</i>		
General	74	83
Orthopedic	57	64
OB/GYN	44	49
<i>Number attending/month</i>		
<10	4	5
10-50	40	47
50-100	13	15
100-150	6	7
>150	22	26
<i>Distance Travelled (km)</i>		
<50	52	58
50-100	27	30
100-150	2	2
150-200	4	5
>200	4	5

% of 'no shows' = 6.2%

% of patients scheduled for surgery seen in clinic 52%

to the clinic while 23% also detail which do not require referral. To achieve maximum efficiency requires avoiding referral of patients who will not benefit. The most effective means of screening who needs to be seen by an anesthesiologist preoperatively would seem to be the use of a questionnaire with "flags" to determine which responses require onward referral.⁴ Only 20% of hospitals use this system while 55% continue to rely on surgeons to recognize the need for referral. This referral by surgeons has been previously reported.^{3,5,6} Lee *et al.* observed that appropriate referral of patients "at risk" is essential to the maximum efficiency of a preoperative assessment system.⁷ Little is known about how this determination is made and they reported large variations between the referral decisions of consultant anesthesiologists, anesthetic trainees and nurses in a questionnaire study. Conway *et al.* reported that, by their criteria, appropriate referral by the surgeons in their institution occurred in 81% patients.³

Once in the clinic, patients are seen by a nurse using a questionnaire in 55% of cases. Here the "flags" will determine onward referral. A specialist anesthesiologist is the first person to see the patient in 40% of hospitals and in 5% a family physician anesthetist. Rudkin *et al.* reported that nurses using a questionnaire referred 46% of patients on to see an anesthesiologist.⁴

General surgery, orthopedics and obstetrics/gynecology comprise the majority of referrals. The first two categories certainly contain many older patients undergoing major surgery and will increase with changing demographics of the population. The pat-

tern of referral in a particular institution will reflect the services provided. Conway *et al.* detailed orthopedic, ophthalmological and general surgical patients as the majority of referrals.³ Many referrals of obstetric patients are to enable discussion of options for labour analgesia and pregnancy related concerns.³ In Ontario, 52% of patients scheduled for surgery are being seen in assessment clinics. This compares with 22% reported by Kerridge *et al.* in Australia.⁸

There is a wide spread in the number of patients seen per month by different institutions reflecting different referral patterns. The majority of patients (90%) travel less than 100 km to be seen. Only 6.2% of patients fail to show up at the clinic as requested. This probably indicates the motivation of patients to have their surgery performed and their unwillingness to upset "the system". Kerridge *et al.* noted that the number of patients not arriving at the hospital on the day of their surgery decreased from 5% to 2% in the initial two years of the preoperative clinic operation.⁸

Access to investigations is provided by 97% of hospitals on the same day which is a considerable convenience to patients. However, only 36% of departments are able to provide anesthetic assessment on the same day that patients see their surgeon. In 51% of cases patients can see an internist on the same day as the anesthesiologist but this is only possible in 30% of hospitals for cardiological consultation. Rudkin *et al.* noted that further investigations were ordered by anesthesiologists in 8.5% of patients.⁴ Fischer *et al.* promoted an "informal assurance" with the surgeons that cases seen in the clinic would be operated on as planned.⁹ Their clinic load includes 54% ASA 3 patients and the anesthesiologist can cancel a previously ordered test if it is deemed unnecessary. Similarly, their overall preoperative consultation rate has been reduced by 73% since the final decision on the necessity for a consultation has been the responsibility of an anesthesiologist.

The majority of hospitals provide funding for a clinic nurse (87%) and some for a secretary (43%). Anesthesiologist remuneration is effectively all fee-for-service except for one hospital paying a sessional fee. All hospitals with a cardiac surgical service, except one, admit their patients on the day of surgery having been assessed in the outpatient clinic. These patients are probably amongst those requiring the greatest amount of preparation and their inclusion in pre-anesthetic statistics suggests that the system does work.

Hospitals may be reluctant to spend the money required to provide a clinic of questionable benefit. Boothe and Finegan compared the cost of laparoscopic cholecystectomy performed on patients arriving on the morning of surgery with those admitted the previ-

ous evening.¹⁰ They computed a saving of \$360 per patient, if admitted on the same day as their surgery. However, they bemoaned the lack of detailed information on the costs of the individual components of a hospital program to enable accurate computation of fixed and variable costs.

Eagle and Davies have suggested that better assessment of risk may contribute to better medical care.¹¹ However there are no randomized studies to support this contention. Unexpected cancellations and admissions of patients originally scheduled for day surgery are useful outcome indicators of this system. Ross and Watson have reported a 14% cancellation rate for patients scheduled for joint replacement surgery.¹² A commendable aim is that unexpected cancellations should be about 1.5%.⁵ Future research must examine the cost/benefit ratio of provision of these clinics and follow outcome indicators such as unexpected cancellation and admission.

In summary, as hospitals endeavour to find ways to function more efficiently and at less cost the provision of pre-anesthetic evaluation clinics gives anesthesiologists an opportunity to become leaders in a high profile activity in concert with the mission of their institution. These clinics are being commonly provided in Ontario. For the convenience of patients, a commendable aim is the provision of full pre-anesthetic assessment, including consultations with other specialists, during one visit. There is a need for further outcome studies to identify whether efficiency is improved using indicators such as cancellations, unexpected admissions and "no show" rates.

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APPENDIX

PLEASE PRINT YOUR

Name: _____
 Telephone Number: _____
 Fax Number: _____

In which type of hospital is your department?

Community hospital: _____

Teaching hospital: _____

How many anesthesiologists work in your department (excluding residents)? _____

Of the above, how many are:

Certified anesthesiologist: _____

Family physician/anesthesiologist: _____

Are there anesthetic residents working in your hospital? YES _____ NO _____

How many cases with anesthesiologists are performed in your ORs/year?: _____

Of the above cases, what percentages are:

Inpatient: _____

Day surgery (outpatient—>outpatient): _____

Same day admissions (outpatient—>inpatient): _____

Do you hold regular clinics using anesthetic and/or non-anesthetic personnel for assessment of patients prior to elective anesthesia? YES _____ NO _____

If not, do you intend to start provision of such a clinic within the next 12 months?

YES _____ NO _____

(If NO, this is the end of the survey. Thank you and please return the completed form.)

Please answer the following questions regarding your current or planned clinics.

How often do you hold these clinics?

Daily: YES _____ NO _____

Weekly: YES _____ NO: _____

Biweekly: YES _____ NO _____

Monthly: YES _____ NO _____

Other: _____

Do you endeavour to assess?

All patients for day surgery (outpatient—>outpatient)
 YES _____ NO _____

All patients for same day admission (outpatient—>inpatient) YES _____ NO _____

Some patients for day surgery (outpatient—>outpatient) YES _____ NO _____

Some patients for same day admission (outpatient—>inpatient) YES _____ NO _____

Where do you hold these clinics?

Outpatient department: YES _____ NO _____

Anesthetic department: YES _____ NO _____

Other location (please specify): _____

Does your department issue written guidelines/screening tools regarding which patients should be referred to the clinic? YES _____ NO _____

Does your department issue written guidelines/screening tools regarding which patients DO NOT NEED to be referred to the clinic?

YES _____ NO _____

If there is pre-selection of patients to be referred to the clinic; who usually does this selection?

Surgeon: _____

Internist: _____

Family physician: _____

Screening questionnaire/nurse: _____

Other: _____

Who typically sees these patients in the clinic?

Family physician/anesthesiologist: YES _____ NO _____

Specialist anesthesiologist: YES _____ NO _____

Resident: YES _____ NO _____

Other non-anesthesiologist physician (please specify):

YES _____ NO _____

Nurse: YES _____ NO _____

What percentage of patients booked for surgery are seen in the pre-anesthetic assessment clinic?:

How many patients are seen in your departmental pre-anesthetic clinics in the average month?

<10: _____

10 - 50: _____

50 - 100: _____

100 - 150: _____

>150: _____

Rank in order (1,2,3) the three services referring the

most patients to the clinic.

Orthopedic: _____

General: _____

Plastics: _____

Thoracic: _____

ENT: _____

Pediatric: _____

Ophthalmology: _____

Urology: _____

Cardiac: _____

Neurosurgical: _____

Vascular: _____

Ob/Gyn: _____

Up to how far do patients have to travel to the pre-anesthetic clinic?

<50km: _____

50-100km: _____

100-150km: _____

150-200km: _____

>200km: _____

What percentage of patients fail to show up at the clinic? _____

Is there any deliberate effort made by the Department of Anesthesia to assess patients on the same day that they are seen in the surgeon's outpatient clinic?

YES _____ NO _____

Can patients attend the following on the same day that they are seen in the anesthetic pre-assessment clinic?

Internal medicine consultation?

YES _____ NO _____

Cardiology consultation? YES _____ NO _____

Pre-admission testing (X-ray, laboratory etc.)

YES _____ NO _____

Are letters typed for all patients seen in the clinic?

YES _____ NO _____

Is there direct funding from the hospital for the clinic?

For nurses? YES _____ NO _____

For physician? YES _____ NO _____

For secretary? YES _____ NO _____

Specifically, how is the anesthetist doing the clinic remunerated?

Fee for service? YES _____ NO _____

Salary? YES _____ NO _____

Sessional payment by hospital? YES _____ NO _____

Other (please specify) _____

Is cardiac surgery performed in your hospital?

YES _____ NO _____

If NO, this is the end of the survey. Thank you and please return in the enclosed envelope.

Please answer the following questions regarding patients scheduled for cardiac surgery.

Does your hospital admit patients for cardiac surgery on the day of surgery?

YES _____ NO _____

If yes, are these patients for cardiac surgery seen in the pre-anesthetic clinic?

YES _____ NO _____

If these same day admission cardiac surgery patients are NOT seen in the pre-anesthetic clinic where are they assessed by Anesthesia?