Universal access: But when? Treating the right patient at the right time: Access to cardiac rehabilitation

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The Canadian Cardiovascular Society formed an Access to Care Working Group ('Working Group') in the spring of 2004. The mandate of the group was to use the best science and information to establish reasonable triage categories and safe wait times for access to common cardiovascular services and procedures. The present commentary presents the rationale for benchmarks for cardiac rehabilitation (CR) services. The Working Group's search for evidence included: a full literature review of the efficacy of CR, and the factors affecting access and referral to CR; a review of existing guidelines for access to CR; and a national survey of 14 CR programs across Canada undertaken in May 2005 to solicit information on referral to, and wait times for, CR. The Working Group also reviewed the results of The Ontario Cardiac Rehabilitation Pilot Project (2002) undertaken by the Cardiac Care Network of Ontario, which reported the average and median wait times for CR.

Some international agencies have formulated their own guidelines relating to the optimal wait time for the onset of CR. However, due to the limited amount of supporting literature, these guidelines have generally been formed as consensus statements. The Canadian national survey showed that few programs had guidelines for individual programs.

The Cardiac Care Network of Ontario pilot project reported that the average and median times from a cardiac event to the intake into CR were 99 and 70 days, respectively. The national survey of sampled CR programs also revealed quite remarkable differences across programs in terms of the length of time between first contact to first attendance and to commencement of exercise. Programs that required a stress test before program initiation had the longest wait for exercise initiation. Some patients need to be seen within a very short time frame to prevent a marked deterioration in their medical or psychological state. In some cases, early intervention and advocacy may reduce the risk of loss of employment. Or, there may be profound disturbances in the patient's family as a result of the cardiac event. For other patient groups, preferable wait times vary from one to 30 days, and acceptable wait times vary from seven to 60 days. All cardiovascular disease patients require core aspects of CR services. Patients who would derive benefit from formal CR programs should be provided the opportunity, given the proven efficacy and cost effectiveness of CR.

Key Words: *Access, Cardiac rehabilitation, Wait times*

L'accès universel, mais quand ? Le traitement du bon patient au bon moment : L'accès à la réadaptation cardiaque

La Société canadienne de cardiologie a formé un groupe de travail sur l'accès aux soins (le « groupe de travail ») au printemps 2004. Le groupe était mandaté pour utiliser l'information et les connaissances scientifiques de pointe afin d'établir des catégories raisonnables de triage et des temps d'accès sécuritaires pour accéder aux services et interventions courants en santé cardiovasculaire. Le présent commentaire aborde la raison d'être des normes en services de réadaptation cardiaque (RC). Les recherches du groupe de travail afin de trouver des données probantes incluaient une analyse bibliographique complète de l'efficacité de la RC et des facteurs influant sur l'accès à la RC et l'aiguillage vers la RC. Une analyse des lignes directrices en place pour accéder à la RC et une enquête nationale de 14 programmes de RC au Canada entreprise en mai 2005 pour solliciter de l'information sur l'aiguillage vers la RC et les temps d'attente pour obtenir ces services. Le groupe de travail a également examiné les résultats du projet pilote de réadaptation cardiaque de l'Ontario (2002) entrepris par le *Cardiac Care Network* de l'Ontario, qui faisait état des temps d'attente moyens et médians pour obtenir des services de RC.

Certains organismes internationaux ont formulé leurs propres lignes directrices sur le temps d'attente optimal avant d'entreprendre une RC. Cependant, en raison du nombre limité de publications complémentaires, ces lignes directrices sont généralement présentées sous forme d'ententes consensuelles. L'enquête nationale canadienne démontre que peu de programmes sont dotés de lignes directrices pour des programmes individuels.

D'après le projet pilote du *Cardiac Care Network* de l'Ontario, les temps d'attente moyen et médian d'un événement cardiaque au début de la RC était de 99 jours et de 70 jours, respectivement. L'enquête nationale de programmes de RC échantillonnés révélait des différences remarquables entre les programmes pour ce qui est du délai entre le premier contact et la première participation, puis le début des exercices. Les programmes où il fallait effectuer une épreuve à l'effort avant de commencer étaient reliés au temps d'attente le plus long avant le début des exercices. Certains patients doivent être vus très rapidement pour éviter une détérioration marquée de leur état médical ou psychologique. Dans certains cas, une intervention rapide et de la défense d'intérêts peuvent réduire le risque de perte d'emploi. La famille du patient peut également être très perturbée par l'événement cardiaque. Pour les autres groupes de patients, le temps d'attente préférable varie de un jour à 30 jours, et le temps d'attente acceptable varie de sept jours à 60 jours. Tous les patients atteints d'une maladie cardiovasculaire ont besoin des principaux aspects des services de RC. Les patients qui tireraient profit de programmes officiels de RC devraient avoir l'occasion d'y avoir accès, compte tenu de l'efficacité démontrée et de la rentabilité de la RC.

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The Canadian Cardiovascular Society (CCS) is the national professional society for cardiovascular specialists and researchers in Canada. In 2002, at the Canadian Cardiovascular Congress Public Policy Session, Senator Wilbert Keon stated that an important role of such organizations is to develop national benchmarks for access to cardiovascular care that could be validated and adopted or adapted by the provinces. Further, he noted that the time was right for such initiatives, as policy makers and other stakeholders in the health care system grapple with access and wait time issues.

Currently, there are no national benchmarks or targets for access to care for cardiovascular procedures, office consultations or rehabilitation. While some provinces have established targets for some cardiovascular procedures, no national consensus exists regarding wait time targets, issues of regional disparities or even on how to approach the problem. A professional organization such as the CCS, with its broad-based membership of cardiovascular experts, is ideally suited to initiate a national discussion and commentary on wait times and access to care issues as they pertain to the delivery of cardiovascular care in Canada.

The CCS Council formed an Access to Care Working Group ('Working Group') in the spring of 2004, whose mandate was to use the best science and information to establish reasonable triage categories and safe wait times for access to common cardiovascular services and procedures. The Working Group elected to start the process with a series of commentaries. Each commentary is intended to be a first step in a process to encourage the development of national targets. The commentaries summarize the current variability of benchmarks and wait times across Canada, the currently available data regarding the relationship between wait times and the risk of adverse events, and the identification of gaps in existing data. Using best evidence and expert consensus, each commentary takes an initial position on what the optimal benchmark for access to care should to be for a cardiovascular service or procedure. The commentaries also call on cardiovascular researchers to fill the gaps in this body of knowledge and to further validate safe wait times for patients at varying degrees of risk.

WHAT IS CARDIAC REHABILITATION?

The present commentary raises issues related to cardiac rehabilitation (CR). The Canadian Association of Cardiac Rehabilitation (CACR) defines CR as "the enhancement and maintenance of cardiovascular health through individualized programs designed to optimize physical, psychological, social, vocational, and emotional status. This process includes the facilitation and delivery of secondary prevention through risk factor identification and modification in an effort to prevent disease progression and recurrence of cardiac events" (1).

Cardiovascular disease (CVD) is a chronic disease that can be controlled, but at present, cannot be cured. In today's environment of less invasive interventions and shorter hospital lengths of stay, the needs of patients with chronic CVD are not fully addressed by acute care alone. Good chronic disease management and secondary prevention have become essential elements in contemporary cardiac care. Cardiac prevention and rehabilitation services are effective and efficient channels for the delivery of care designed to stabilize, minimize or reverse the progression of the atherosclerotic disease process (2). Regular interactions with CR professionals that focus on optimizing function and prevention, attention to treatment guidelines and CR behavioural interventions promote good disease management practices.

It is important to appreciate the terms 'CR services' versus 'CR programs'. 'CR services' refers to the totality of interventions that contribute to the eventual outcome. Examples of a CR service may include an education class while in hospital, a visit to the family doctor to discuss vocational issues, or evaluation and treatment at a lipid clinic. However, most health care practitioners equate CR with formalized programs. CR programs deliver such services in a structured format and include a medical assessment, education, exercise training, risk factor modification and psychosocial support. For the present discussion, it was assumed that CR refers to formal CR programs.

METHODOLOGY

The Working Group's search for evidence included:

- a full literature review of the efficacy of CR, and factors affecting access and referral to CR;
- a review of existing guidelines for access to CR; and
- a national survey of 14 CR programs across Canada in May 2005 to solicit information on referral to and wait times for CR.

The Working Group also reviewed the results of The Ontario Cardiac Rehabilitation Pilot Project (2002) undertaken by the Cardiac Care Network of Ontario (CCN), which reported average and median wait times for CR.

The draft version of the present report was sent to the Board of Directors of the CACR for secondary review and the final document was then reviewed and ratified by the primary panel.

RESULTS

Efficacy of CR

CR is an evidence-based intervention that has been shown to reduce both morbidity and mortality. Comprehensive multifactorial rehabilitation and prevention programs have been shown to slow or partially reduce the progression of coronary atherosclerosis (3,4). Meta-analyses of studies performed in the 1970s and 1980s revealed a significant reduction in total and cardiac mortality following participation in CR (5,6). While the application of these analyses in today's contemporary care environment of major advances in patient management and adjunctive cardioprotective drugs is being questioned, results from a 2003 meta-analysis (7) based on 48 randomized trials and over 4000 more recent subjects support the findings of the earlier systematic reviews. Exercise-based CR, compared with usual medical care, resulted in reductions in total mortality of 27% (95% CI 0.54 to 0.98) and cardiac mortality of 26% (95% CI 0.57 to 0.96). Furthermore, a recent randomized controlled trial of patients with single-vessel disease compared a 12-month CR program with percutaneous coronary intervention (PCI). The CR group demonstrated superior event-free survival (87%) and exercise capacity compared with the PCI group (70%) (P=0.023). The CR outcomes were also accomplished at a lower cost than PCI (8).

Gains in function and quality of life are also realized by participation in CR. Exercise-based CR has been shown to increase peak oxygen uptake by 11% to 36%, with the greatest improvement in the most deconditioned individuals (9). In a contemporary study of post-PCI patient (10), exercise training was found to increase functional capacity, improve lipid profiles,

enhance quality of life and reduce recurrent cardiac events compared with controls. Exercise training also demonstrated anti-ischemic effects, improving both symptom and ischemic thresholds (11,12). Resistance training has been integrated in CR within the past 10 years and resulted in improved muscular strength and ability to carry out daily tasks (13).

Exercise training and lifestyle counselling can favourably modify blood pressure (14,15), serum triglyceride levels, high-density lipoprotein cholesterol (16-18), insulin sensitivity and glucose homeostasis (19). Psychosocial problems, such as depression and anxiety, are negatively associated with prognosis. Although studies to date have failed to document the prognostic benefits of behavioural-based therapies, they do point to improvements in symptoms of depression and reduced feelings of social isolation (20).

Based on this level of evidence, CR is recommended for most, if not all, patients with documented CVD (1).

Access and referral to CR

Despite the documented benefits of CR and the fact that practice guidelines recommend that CR be offered to all patients with CVD, there are inconsistencies in referral practices that generally result in inequality in referral and access to CR (21,22). It has been found that an enhanced referral rate to CR is associated with:

- a discharge diagnosis of acute myocardial infarction (AMI) (21,23);
- coronary artery bypass graft (CABG) surgery (21,23);
- age younger than 65 years (21,23);
- male sex (23-25);
- hyperlipidemia (23);
- presence of comorbidities (26); and
- previous participation in CR (21).

Patients with CVD, prior CABG surgery, peripheral arterial disease, stable angina or an ejection fraction of less than 30% are less likely to be referred (23).

Patient, physician and health care system-related factors have been found to contribute to inconsistent referral practices (23,24,26,27). A recent study (27) of a random sample of primary care physicians, cardiologists and cardiovascular surgeons in Ontario found four main factors associated with physician referral:

- beliefs about the benefits of CR;
- patient characteristics (eg, motivation);
- awareness of CR sites and the referral process; and
- referral norms (eg, physician perception that their colleagues generally refer their patients to CR and departmental systems).

It has been suggested that an automatic referral process, in which a CR referral is generated as a standard order from electronic records for all eligible patients, results in increased referrals and reduced disparities in access (28-31). Research by Labresh et al (31) found that a 'Web-based patient management tool', which was piloted in 24 hospitals in the United States and included an automatic referral for eligible patients, increased CR referral from 34% to 73% over a 10 to 12 month period (31). Similarly, Grace et al (30) found that automatic electronic referral to a CR site nearest home compared with usual referral resulted in 43% of eligible patients enrolling in CR, an additional 23% to 28% enrolment over that commonly reported in literature. In addition, the automatic referral process resulted in consistent participation regardless of the indication of referral (30,32,33).

Preliminary research that identified enabling factors (eg, social support, benefits and barriers of exercise, proximity and time), rather than predisposing factors (eg, sex, age, education, comorbid conditions), as significant predictors of CR enrolment in cardiac patients automatically referred to CR, lends further support to the potential of automatic referral in improving access to CR (29). The main potential downfall to automatic referral, however, is that through increasing referral rates, CR programs may exceed capacity, resulting in longer wait times for CR. Future efforts will be directed toward the identification of the cardiac subpopulations likely to gain the most from a referral to CR.

Existing wait time guidelines for CR

A few international agencies have formulated their own guidelines relating to the optimal time for the onset of CR. However, due to the limited amount of supporting literature, these guidelines have generally been formed as consensus statements.

"The National Service Framework for Coronary Heart Disease" (34), published in the United Kingdom in 2000, recommends that patients should commence structured exercise sessions that meet their individually assessed needs four weeks after an acute cardiac event, unless contraindicated. In contrast, the 2004 National Heart Foundation of Australia and the Australian Cardiac Rehabilitation Association "Recommended Framework for Cardiac Rehabilitation" (35) states that programs should commence on discharge from hospital. Similarly, the New Zealand 2002 "Heart Foundation Best Practice Evidence-based Guideline: Assessment and Management of Cardiovascular Risk" (36) recommends that outpatient CR should commence from one or two weeks up to 12 weeks post-discharge. The American Heart Association, the American Association of Cardiovascular and Pulmonary Rehabilitation and the European Society of Cardiology provide no formal guidelines as to when CR should commence.

Very few programs in the Working Group's national survey reported having guidelines for wait times for their own program. Table 1 presents the guidelines mentioned in the survey and the number of programs that supported each guideline.

AMI and PCI

There is no evidence to indicate specifically when patients should commence CR to derive the most benefit following an AMI and PCI. With respect to the exercise portion of CR, the American College of Sports Medicine's clinical exercise guidelines (37) state that submaximal exercise testing may be performed as early as four to six days after an AMI and symptom-limited tests at more than 14 days after AMI. The guidelines report that low-level exercise testing provides sufficient data to make recommendations about the patient's ability to safely perform activities of daily living and serves as a guide for early ambulatory therapy (37).

There are no data to indicate the optimal time of the commencement of CR after a PCI. Future studies could evaluate the

TABLE 1
Summary of self-determined wait time guidelines for cardiac rehabilitation programs included in the Access to Care Working Group survey and the number of surveyed programs

Component	Program guideline	Programs surveyed	Program guideline	Programs surveyed	Program guideline	Programs surveyed	Program guideline	Programs surveyed	Program guideline	Programs surveyed
Receipt of referral to first contact	3 days	3	2 weeks	1	≤3 weeks	1	<4 weeks	2	13 weeks	1
First contact to first attendance	1 week	1	≤3 weeks	3	2–4 weeks	1				
First contact to stress test	1 week	1	≤3 weeks	3	4 weeks	2				
Stress test to exercise program	≤1 week	2	3 days	1						
Event to exercise program	6–8 weeks	1	13 weeks	1						
First attendance to other services	≤1 week	2	≤3 weeks	1	<3 months	1				

Access to Care Working Group survey of 14 centres across Canada, May 2005 (personal communication)

effects of exercise on left ventricular (LV) functioning to ensure optimal recovery. An observational study (38) that looked at the time course of LV function recovery after primary PCI in patients with AMI demonstrated that improvement of LV parameters (LV function and volume) becomes apparent only seven days postprocedure, reaching statistical significance at 30 days, and progressively increases until the third month after reperfusion in patients on whom PCI was performed within 4 h from symptom onset. No significant improvement is seen after this time.

For stent implant, it takes several days for the femoral puncture site to heal and approximately one to three weeks for endothelium to cover a bare metal stent; however, coated stents may require nine to 12 months for complete healing. However, there is no evidence for increased risk from moderate exercise during this time (36). It is suggested that in this population, the ideal wait time for CR is two weeks from angioplasty, and an acceptable time is within the first 30 days.

CABG surgery

Exercise is normally limited during the early weeks after CABG surgery until there is adequate healing of the sternotomy and surgical incisions, but low-level activities (eg, walking) can usually begin 48 h following surgery with gradual progression (36). Two surgical consensus papers (39,40) have reviewed the influence of perioperative and early postoperative factors on the timing of CR. The authors concluded that CR may commence two to four weeks following CABG surgery and valvular procedures in patients with normal and slightly reduced LV function, four to six weeks following cardiac transplantation or in patients with congenital heart disease, and one to two weeks following less invasive heart surgery. Complete wound healing after the conventional trans-sternal approach usually takes six weeks. Therefore, certain activities, such as uncontrolled mobility of the shoulders and arms, and lifting loads heavier than 10 kg, should be avoided (39,40).

Current referral rates

A survey of a sample of CR programs within Canada revealed that most sites receive referrals automatically from surgical and nonsurgical hospital units (Table 2). Caution must be taken in the interpretation of these results, because this sample may not be applicable to all CR programs in Canada. One program reported that although CR referral is automatic, privacy and patient confidentiality legislation prevents hospital staff from contacting a patient unless that patient has provided consent in hospital. Unfortunately, this appears to defeat the purpose of automatic referral, because only those who feel ready to make the decision about CR while in hospital provide consent.

Many programs also receive manual referrals from physicians, allied health care professionals and patients. Programs in Quebec and Saskatoon reported using a systematic referral process in which unit nurses deliver CR pamphlets and referral forms to all eligible patients before discharge from hospital. This system allows for two-way communication between health care professionals and patients regarding CR referral; however, additional staffing and short hospital stays may limit the ability to reach all eligible patients.

According to the surveyed programs, initiation of automatic referral in Ontario and systematic booklet delivery in Quebec have increased CR referrals; however; no formal data were captured in the survey.

Current wait times for CR

The Working Group identified two sources of wait time data for CR – one was specific to Ontario and one was national:

- The CCN Ontario Cardiac Rehabilitation Pilot Project. The pilot project reported that the average and median times from cardiac event to intake into CR were 99 and 70 days, respectively (41). The type of referring clinician and the location of the referral was shown to have an impact on the timeliness of access (Table 3). Furthermore, the average and median times from receipt of the patient referral to intake were 40 and 31 days, respectively (41). The factors that appear to be most responsible for the delays are referral generation and processing, initiation of patient contact following referral receipt and CR intake session coordination.
- National survey of wait times. The survey of sampled CR programs in May 2005 revealed quite remarkable differences across programs in length of time between first contact to first attendance and commencement of exercise (Table 4). Those programs that rely on stress testing before exercise program initiation or do not have private stress testing facilities reported the longest wait time for exercise initiation.

RECOMMENDATIONS

For the present discussion, it was assumed that a wait time is that period from an acute event until formal entry into the CR program.

Recommended wait time benchmarks

Given the documented efficacy of CR and the relative low cost for the intervention, the panel thought that the preferable wait

TABLE 2
Cardiac rehabilitation program referral process, referral numbers and percentage of patients enrolled in the past year to programs included in the Access to Care Working Group survey

Program	Referral process	Patients referred to this program in past year (n)	Patients enrolled in program from total referred (%)*
A	Automatic (since November 2004)	1850	51
B	Automatic for STEMI patients (past year), physician for all others	1419	60–70
C	80% directly from the inpatient area, automatic through surgical patient care map, referral on care flow sheet for catheterization laboratory	1250	95
D	Hospital physician and general practitioner	1249	79.2
E	Automatic through acute myocardial infarction care map, physician for surgical and angina patients. CRP needs patient permission to contact postdischarge	1082	40
F	Automatic	1000†	79
G	Automatic through cardiac care map (on- and off-service)	900	66
H	Automatic for acute myocardial infarction and CABG surgery through care map, physician and self for CHF and others. CRP needs patient permission to contact postdischarge	565	95
I	Automatic for nonsurgical, physician and self manual systematic. Nurse delivers discharge pamphlet and referral (since September 2003)	450	65
J	Allied health care professional, hospital physician and general practitioner, self	450	80
K	Automatic for acute coronary syndrome pathway, physician and self for all others	407	50
L	Allied health care professionals, nurse or physician	360	87.5
M	Predominantly self, as well as physician and allied health care professionals	310	95–100
N	Manual systematic. Nurse delivers discharge pamphlet and referral	275	95–100
Average		826	74

*Access to Care Working Group survey of 14 centres across Canada, May 2005 (personal communication). *Reasons for not attending a program include travel distance, lack of interest or change in medical status; †Approximated. CABG Coronary artery bypass graft; CHF Chronic heart failure; CRP Cardiac rehabilitation professional; STEMI ST elevation myocardial infarction*

time could encompass one to 30 days, depending on the disease category and presenting issues.

Some patients need to be seen within a very short timeframe to prevent a marked deterioration in their medical or psychological state. The acute care health care team would treat most of these conditions; however, it is conceivable that CR may be the first point of contact. In some cases, the required resource (eg, a vocational counsellor or psychologist) may be a specific member of the CR team.

It is recommended that patients who are severely depressed see a psychiatrist or psychologist for assessment and treatment. Depressed patients will not benefit from a traditional CR program until there is some resolution of these symptoms. However, a concomitant exercise program in addition to appropriate treatment for the depression may be useful.

Although not common, some patients may be immobilized by fear of any physical activity. Patients from any diagnostic group may experience this fear; however, it is more commonly seen in those patients with an implantable cardioverter defibrillator who have experienced repetitive discharges.

In some cases, early intervention and advocacy may reduce the risk of loss of employment. Or, there may be profound disturbances in the patient's family as a result of the cardiac event. In this situation, early intervention by a social worker or psychologist is required.

Elective referral patients are those who are stable at the time of assessment and who can wait for CR without experiencing any significant adverse events. The wait time will likely be closer to 30 days, according to the diagnostic category, as shown in Table 5.

Acceptable wait times vary from seven to 60 days, depending on the patient category and need. The ideal standard is to have all patients enter programs within the preferable time period. This would allow early intervention and optimal treatment of risk factors. Nevertheless, considerable literature shows that patients can continue to derive benefit within the acceptable wait time duration.

TABLE 3
Wait times from event to referral, and event to intake by location of referral

	Event to referral (days)		Event to intake (days)	
Location of referral	Mean	Median	Mean	Median
Inpatient unit	13.3	6	59.1	49
Cardiac diagnostics	64.6	42	71.6	48
Outpatient clinic	82.1	47	125.5	90
Physician's office	98.2	49	138.2	91
Average			98.6	69.5

Data taken from reference 41

The above benchmarks are based on the assumption that patients have received initial guidance on physical activity and other risk factors, such as smoking cessation, before starting a formal CR program. It is important to intervene with patients before discharge from hospital to lay the groundwork for subsequent behaviour change interventions. The inpatient CR team or representatives from the outpatient CR program may provide this intervention. One of the concerns often voiced by patients on discharge following AMI or PCI is their lack of understanding as to what they can do. This issue needs to be systematically addressed in this patient population.

TABLE 4
Cardiac rehabilitation wait times at cardiac centres across Canada, May 2005

		Length of time (days)					
Program	Program type	Receipt of referral to first contact	First contact to first attendance	First contact to stress test	Stress test to commencement of exercise program	First contact to exercise program	First attendance to other services (eg, dietician)
A	Onsite	<5	57	67	38	105	106
	Home program	<5	66	83	14–21	97–104	115
B		5 to contact patient	1–25	36	7	43	<7
C		21 (surgical)	28 (surgical)	14	28	42	One-on-one: 42
		7 (nonsurgical)	7 (nonsurgical)				Group: 14
D		3	28	35–42	2	37–44	7
E		1	<28	<28	<7	<35	14–21
F		<2	Variable	28 (PCI)	2–21		14–21
				56 (MI or CABG)			
G		7	21–28	Variable	0 (start after first contact)	28–35	28–42
H		7–14	7–14	14–21	1–2	15–22	<30
I	Prerehabilitation	<2	<5	–	–	<5	<14
	Regular	5	<14	7–14	<7	14–21	7–14
J	Onsite	14–28	91	28–91	<7	35–98	<7
	Home program	14–28	14–28	28	<7	<35	<7
K		14–21	14–21	Variable	<7	21–28	14
L		150	7–14	7–14	0 (start after first contact)	7–14	<5
M		7–14	7–14	–	–	7–14	28–56
N		Variable	7	7	1	8	<7
Average		17.5	26.3	34	9.4	37.1	36.1

Access to Care Working Group survey of 14 centres across Canada, May 2005 (personal communication). CABG Coronary artery bypass graft surgery; MI Myocardial infarction; PCI Percutaneous coronary intervention

TABLE 5
Recommended wait time benchmarks for elective cardiac rehabilitation by diagnosis in days

Diagnostic category	Preferable	Acceptable
CABG/valvular disease*	21–30	30–60
Percutaneous coronary intervention†	2–7	7–60
MI/CHF/stable and unstable angina‡	7–30	30–60
Heart transplantation§	4–10	10–60
Arrhythmias¶	1–30	30–60

**Physical issues (sternotomy) may prevent these patients from beginning exercise earlier, but all other aspects of cardiac rehabilitation could start immediately; †These patients tend to return to work, and 'normal duties' shortly after the procedure; ‡These patients likely need to be seen earlier because there may be more significant medical, vocational and social decisions required. §If the cardiac rehabilitation team is seeing the patients for early mobilization post-transplant, they need to be seen as soon as possible. Often these patients may be from out of town; ¶Urgency likely reflects the psychosocial sequelae (see above discussions). 'Acceptable' time reflects the overall median wait time of 69 days seen in The Ontario Cardiac Rehabilitation Pilot Project undertaken by the Cardiac Care Network of Ontario. It is assumed that this wait time represents an acceptable wait time because patients improved during this study, and this time reflected a real-world experience with a large cohort of patients; CABG Coronary artery bypass graft surgery, CHF Chronic heart failure; MI Myocardial infarction; 'Preferable' time reflects the wait time in some of the guidelines used by various programs*

CONCLUSIONS

Despite the established benefits and strong participation recommendations, CR enrolment rates are disappointingly low across Canada, typically limited to 15% to 30% of eligible patients (1). This chronic underuse of CR is a major issue that needs to be addressed in strategies aiming to improve access to cardiac care.

The factors contributing to limited or delayed participation are multifactorial and include referral issues (failure to refer eligible patients, strength of endorsement by physician or health care provider, and time lag between event and referral), program issues (geographical and scheduling limitations, and program model not suited to needs of patient) and capacity issues (lack of services in some areas and lack of capacity in existing programs).

Improvements to referral processes to include systematic prompt referral of all eligible patients, and a clear message from the health care team that CR is an essential and standard component of cardiac care, will lead to increased referral and participation rates. Program delivery models that are consistent with contemporary cardiac care and meet the needs of a wide array of patients need to be developed and evaluated. In addition to the traditional onsite programs, these may include regional models, Internet or other home-based programs, and tailored interventions. Existing capacity must also be examined and new investment in CR service expansion may be required to deliver an appropriate level of services in some regions for this patient population.

All CVD patients require core aspects of CR services. Patients who would derive benefit from formal CR programs should be provided the opportunity, given the proven efficacy and cost effectiveness of CR. The criteria for the best candidates for CR need to be further defined. For those patients referred to CR, optimal program entry would be within the 'preferable' timeframe of up to 30 days.

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