CARDIAC REHABILITATION PROGRAM

Annual Report

2019 - 2020

LIVE Longer. Stronger.

PROGRAM OVERVIEW

The Cardiac Rehabilitation Program (CRP) operates out of two certified medical fitness facilities in Winnipeg, the Reh-Fit Centre and the Wellness Institute at Seven Oaks General Hospital. Both sites endeavor to provide programming that is accessible to all, and program subsidies are available to those who are in need.

The Cardiac Rehabilitation Program utilizes an inter-disciplinary team of health professionals to deliver an evidence-based program that helps individuals with cardiovascular disease acquire the skills and confidence to lead a healthier life.

The Cardiac Rehabilitation Program is a 16-week program that includes education and exercise classes offered at various times throughout the week. The education sessions address topics ranging from understanding the function of the cardiovascular system, cardiac medications, and the central importance of exercise, to other topics such as stress management, heart healthy nutrition, and action planning to achieve behaviour and lifestyle change. The program integrates best practices in health coaching to support longstanding behavior change.

The supervised exercise program aims to safely increase each person's cardiovascular conditioning, flexibility and strength under the careful guidance of the exercise professionals and the rest of the interdisciplinary cardiac rehabilitation team. Through this combination of education and exercise, participants learn how to safely manage their risk factors for heart disease and improve their quality of life. The overall approach emphasizes self-efficacy and is based on a model of self-management.

The program offers a home-based option for people who are not able to attend the site-based program because they live too far away, do not have transportation to attend the sites, or prefer a more independent style of rehab. Home-based CR includes a pre- and post-assessment similar to the facility-based program, phone calls with a Clinical Exercise Physiologist and Case Manager, and access to nutrition counselling and psychological services.

All data for this program is collected in EMR to track all demographics, risk levels, reasons for being in the CR program, and time spent with each participant.

The COVID-19 pandemic has created unprecedented challenges for the health care system and resulted in on-site programming to cease the week of March 16 2020. Sites were able to pivot to a fully home-based model shortly thereafter. Given the pandemic only impacted the program for two weeks within this reporting period, referral patterns and program delivery were not significantly impacted in this reporting period. Participants who were in the program in March 2020 were converted to a home program for the remainder of their rehabilitation, and new program starts at the end of March were pushed back.

Cardiac Rehabilitation is strengthened by a productive partnership which includes the Reh-Fit Centre, Wellness Institute at Seven Oaks General Hospital, WRHA, WRHA Chronic Disease Collaborative, as well as the WRHA Clinical Psychology and Cardiac Sciences Programs, all working together with the medical and surgical hospital staff to augment care for cardiac patients. The program receives automatic referrals from cardiac surgery, medical wards at all Winnipeg hospitals, as well as referrals from the Heart Failure Clinic and the St. Boniface Heart Catheter Lab. The program also participates in research initiated by the University of Manitoba and Cardiac Sciences which aims to strengthen cardiac patient care.

QUALITY INDICATOR/BENEFITS TO PARTICIPANTS

Participants in Cardiac Rehabilitation programs across the world show reduced risk of mortality and morbidity upon completion of Cardiac Rehabilitation, which means a lower risk for death, another cardiac event or additional surgery. More specifically, participants gain improved quality of life and well-being, increased exercise tolerance and functional ability, improvement in their cardiac risk factors (e.g. better lipid profiles, blood sugar levels and blood pressure, and reduced tobacco use) as well as improved psychological symptoms such as mood or depression.

This fiscal year the Cardiac Rehabilitation program selected the following six indicators to track program efficacy as well as to demonstrate the significant and positive benefits of participation in this program:

- Brief Symptoms Inventory (BSI) to measure psychological well-being and risk for depression,
- Total blood cholesterol levels,
- Waist girth,
- MET levels to measure exercise capacity,
- SF-36 Mental Health Summary Score and
- SF-36 Physical Health Summary Score, to measure quality of life.

Changes in outcome variables were examined only for those participants with both pre- and post-data, so the number of individuals included in these analyses is lower than the total number of program participants. Due to COVID-19, post program data is not available for participants exiting the program at the end of March. Each outcome variable was analyzed through a repeated-measures analysis, which examined each individual's change pre- and post- program rather than comparing changes in the average scores of the group as a whole.

Overall, the CRP participants showed significant improvement in all six of the indicators.

PSYCHOLOGICAL WELLBEING (Brief Symptoms Inventory)

BSI provides an overview of a participant's psychological symptoms and their intensity at a specific point in time. From the 53-item questionnaire, a number of subscales are computes as well as an overall Global Severity Index. The BSI-Global Severity Index gives psychologists and other healthcare professionals a single composite score that can be used to assess the participant at intake for psychological problems, objectively support care management decisions, and measure participant progress during and after treatment to monitor change. The BSI-GSI ranges from 0 to 3, with higher scores indicating more intense symptoms of mental illness. A positive post-intervention outcome relates to the reduction in the BSI Global Severity Index score.

Overall, there was a significant decrease in the overall BSI-GSI scores from the beginning of the CRP to the conclusion of the program, from GSI=0.43 to GSI=0.37 ($t=4.77$, $p<.001$). The extent of change in BSI scores was similar for males and females. However, participants under the age of 55 showed a significantly larger improvement in BSI scores than older participants.

TOTAL BLOOD CHOLESTEROL

When blood cholesterol is too high, it builds up in the walls of the arteries which results in a reduction of blood flow to the heart muscle. Total blood cholesterol is a cardiac risk factor that should decrease following the cardiac rehabilitation intervention. A positive outcome for program participants would be a reduction in total blood cholesterol.

Participants experienced a significant decrease in their total blood cholesterol by the end of the program from an average of 3.73 mmol/L to 3.63 mmol/L ($t=2.55$, $p<.05$). Males participants had a significantly greater decrease in their cholesterol levels than female participants. Younger participants experienced a significantly greater improvement in total blood cholesterol than older participants; for participants under the age of 65, the average change in cholesterol was a decrease, but for participants aged 65 and older the change in cholesterol was, on average, an increase from pre-program to post-program. Participants who were diagnosed with Acute Coronary Syndrome (ACS) experienced a larger improvement in blood cholesterol levels than those with other diagnoses. The type of intervention the participants had undergone impacted the change in total cholesterol that they experienced. While participants who had undergone surgical procedures showed an increase, on average, in their cholesterol levels, participants who had other procedures showed a decrease.

WAIST GIRTH

Waist girth has been shown to be a strong predictor of heart disease, stroke, high blood pressure, high blood cholesterol and type-2 diabetes. Even a modest reduction in waist girth can translate into reduced risk of disease and disability. Both exercise and heart healthy nutrition, which is emphasized in this program, can affect a reduction in waist girth.

The average waist girth of participants decreased significantly over the course of the CRP, from 102.1 cm at the beginning to 100.6 cm at the conclusion of the program ($t=7.30$, $p<.001$). The reduction in waist girth experienced by participants was similar regardless of gender or age. Participants diagnosed with ACS had a larger reduction in waist girth, on average, than those diagnosed with other conditions, and participants with non-surgical interventions had a larger reduction in waist girth than those with surgical interventions.

A waist girth of over 102 cm for men and over 88 cm for women is considered to be a substantial risk factor for heart disease. At the beginning of the program, 58.1% of participants had a waist girth higher than recommended, but this percentage fell to 51.4% of participants by the end of the program.

EXERCISE CAPACITY (MET Levels)

MET levels are a way of measuring the amount of energy expended during physical activities. In CRP participants, MET levels were assessed during a graded exercise test. The higher the MET level upon program completion the better the functional capacity and cardiovascular conditioning. MET levels should ideally increase following the cardiac rehabilitation program.

Overall, there was a statistically significant increase in MET level following the CRP (t=-21.37, p<.001). The peak MET level increased from an average of 7.14 METS to 8.55 METS over the course of the CRP. Male participants achieved a significantly greater improvement in their MET level compared to female participants, and participants under the age of 55 showed greater improvement in MET level than older participants. For change in METS level, it was the participants who had undergone surgical procedures who showed a larger improvement in METS compared to those who had other types of interventions prior to their CRP referral. There was also a significant correlation between the improvement in MET level and a reduction in waist girth (r=-.121, p<.01).

The Canadian Cardiovascular Society developed a set of quality indicators with which to assess cardiac rehabilitation programs. One of the quality indicators (CR-17) is the percentage of CRP participants who showed a half metabolic equivalent (MET) increase in their exercise capacity from pre- to post-program. Of the CRP participants from Reh-Fit Centre and the Wellness Institute in 2019-20, 68.0% had a .5 or greater MET improvement throughout the course of the program. The participants who achieved at least a .5 MET improvement were, on average, younger than the participants who achieved less than .5 MET improvement, and a greater proportion of male participants met this goal (70.9%) than did female participants (60.1%). Meeting the goal of a .5 or greater MET improvement was also significantly related to the degree to which the participants engaged in the CRP. Of those participants who had attended the program over 20 times, 72.2% had an improvement of at least .5 MET, compared to only 60.8% of participants who had attended fewer than 20 times.

QUALITY OF LIFE (SF-36 Summary Measures)

The SF-36 is a widely used Health Survey that assesses quality of life. From the 36-item questionnaire, two global scores are computed that assess psychological quality of life (Mental Health Summary Score), and physical health quality of life (Physical Health Summary Score). This year participants benefitted from improved Mental and Physical Health Summary Scores.

Higher scores on the Mental Health Summary Measure indicates the absence of psychological distress

and limitation due to emotional problems, so ideally there should be an increase in this score over the course of the Cardiac Rehabilitation program.

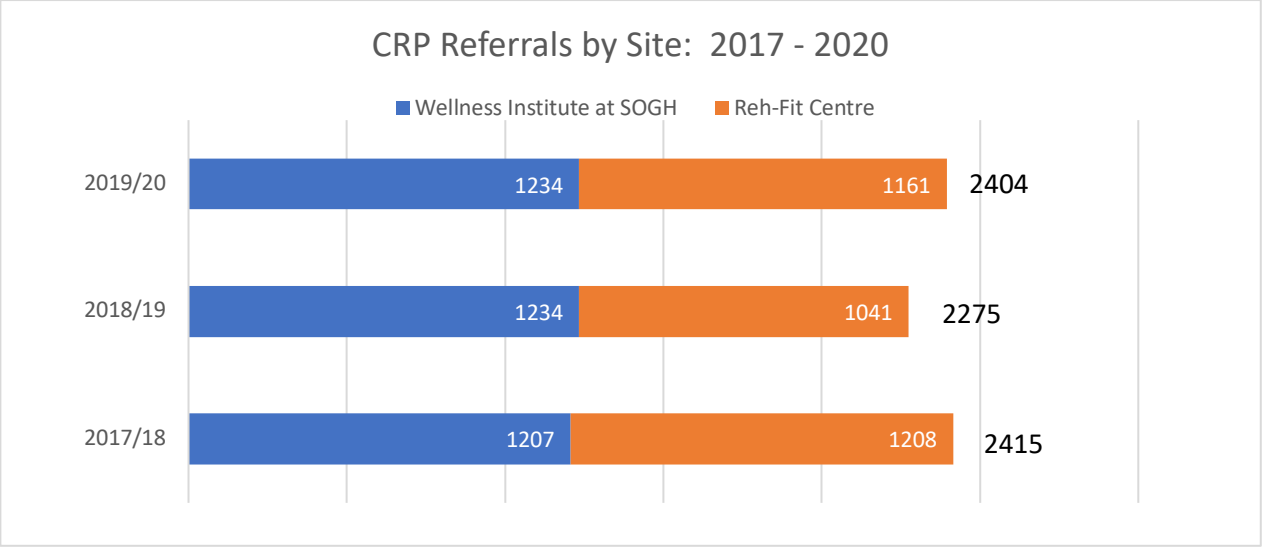
The average Mental Health Summary Score for CRP participants increased significantly over the course of the program, from 48.9 to 51.4 (t=-4.51, p<.001). Gender and age did not impact the extent of improvement in Mental Health Summary Score, but those participants diagnosed with Acute Coronary Syndrome (ASC) had a significantly smaller improvement in this score, on average, than participants diagnosed with different conditions.

Higher scores on the Physical Health Summary Measure indicate the absence of physical limitations or decrements in well-being, high energy levels, and excellent self-rated health, making an increase in score a positive outcome.

CRP participants saw a significant increase in their Physical Health Summary Score, from an average score of 38.0 at the beginning of the program to 45.7 at the program's conclusion (t=-16.26, p<.001). Once again, the extent of improvement in Physical Health Summary Measure scores was not affected by gender or age. For this measure, participants who underwent surgical interventions experienced greater improvements in this score, on average, than participants who had non-surgical interventions.

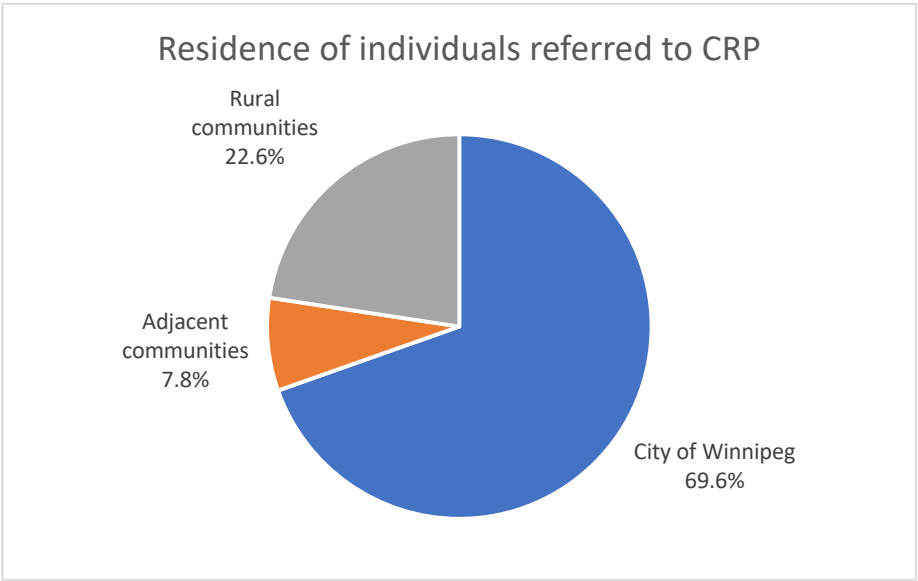
CRP REFERRALS

The total number of referrals received by the Cardiac Rehabilitation Program consisted of all referrals that were received between April 1, 2019 and March 31, 2020. Overall, there were 2404 referrals in 2019/20 to the CRP at the Wellness Institute at SOGH or Reh-Fit Centre. The chart below shows the number of referrals received by each site, and comparative data from the previous two years. For a complete summary of the number of referrals received monthly and quarterly, see Appendix B. Note that COVID-19 impacted referrals during the last two weeks of the fiscal year as referral sources were closed/ reduced.



CRP referrals were made for individuals who ranged in age from 17 to 100 years old, with an average age of 65.5 years. Males made up 69.6% of the referrals, and females 30.4% of referrals.

The majority of the referrals (69.6%) were given to individuals who lived within the city of Winnipeg; 7.8% of referrals were to individuals living in communities adjacent to Winnipeg (within a 10-minute drive to the perimeter), and 22.6% lived in other communities as far away as Churchill.



Diagnosis:

All program referrals received were classified according to the potential participant's primary diagnosis. The diagnosis was categorized as either 'Acute Coronary Syndrome' (which includes myocardial infarction, unstable angina, and ACS NOS), 'Non-ACS', or 'inadequate data'. These classifications are described in further detail in Appendix A ("Definitions").

The table below shows the total number of referrals received in 2019/20, according to the potential participant's primary diagnosis and referring hospital. The most common non-ACS diagnosis was valvular disease (30.6%) followed by heart failure (23.2%). For a summary of the potential participant's primary diagnosis prior to classification, see Appendix C.

Referring site:	ACS Referrals	Non-ACS referrals	Inadequate data	TOTAL
St. Boniface General Hospital	1089	715	8	1812
Grace Hospital	77	6	1	84
Health Sciences Centre	58	1	1	60
Seven Oaks General Hospital	32	4	9	45
Concordia Hospital	8	1	3	12
Victoria Hospital	2	1	0	3
Other/outpatient*	120	230	13	363
Non-WRHA hospital	17	8	0	25
TOTAL	**1403**	**966**	**35**	**2404**

**'Other/outpatient' referrals include patient-initiated referrals or those made by community physicians*

63.2% of the ACS cases within the WRHA received a referral to the CRP

All referrals were also classified according to the type of intervention that the potential participant received. All referrals were classified as having a surgical intervention, a non-surgical intervention, or no intervention identified (including missing data). These classifications are described in further detail in Appendix A ("Definitions").

Interventions in the surgical category included:

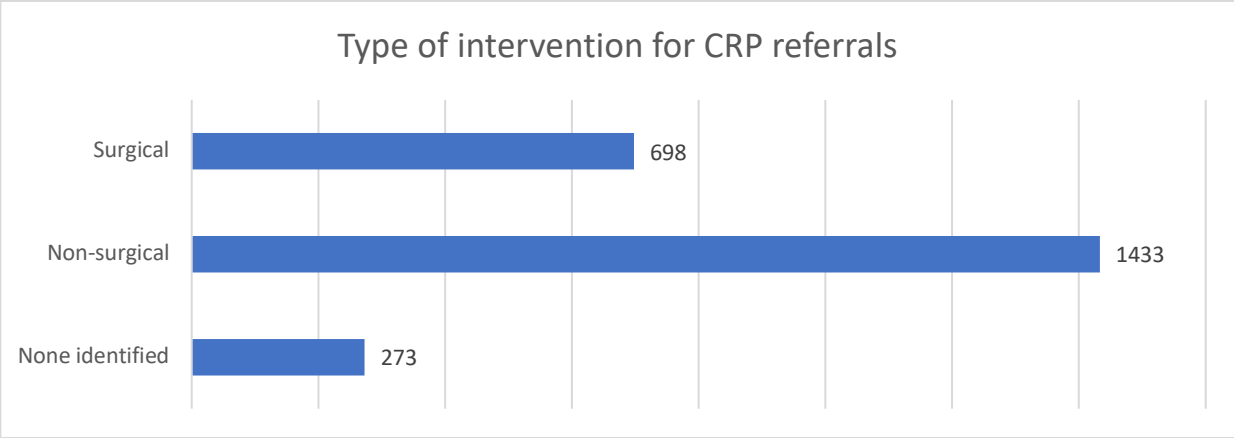
- Coronary Artery Bypass Graft (CABG)
- Ventricular Assisted Device (VAD)
- Valve repair/replacement
- Transcatheter Aortic Valve Implantation (TAVI)
- Thoracic Endovascular Aortic Repair (TEVAR)

86.4 % of the cardiac surgical cases within the WRHA received a referral to the CRP

In 2019/20, 698 of the individuals who had been referred to the CRP had surgical interventions.

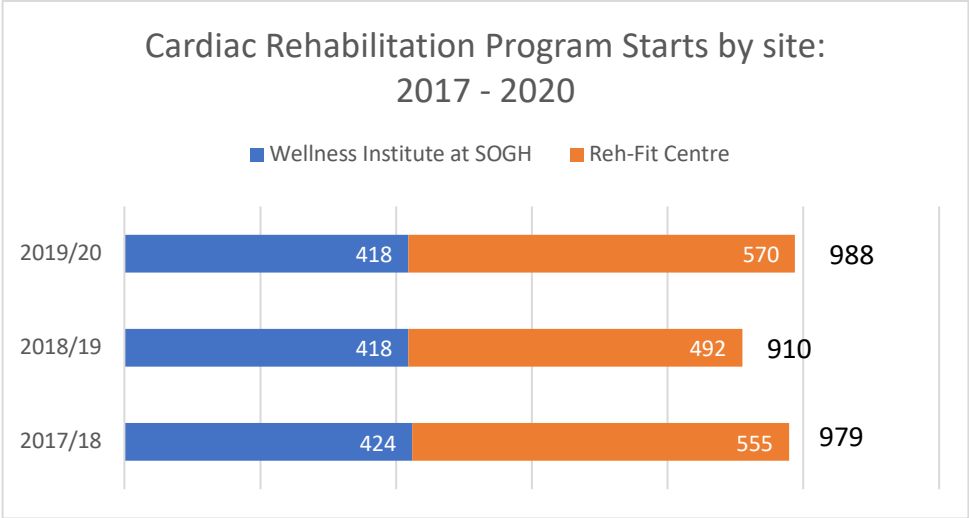
The most common surgical intervention was CABG (52.7%) followed by valve repair or replacement (36.7%). Almost three-quarters (72.9%) of the individuals who received non-surgical interventions had

had a PTCA +/- stent, and almost one-quarter (23.9%) had interventions classified as 'other', which often indicates medical management. For a further breakdown of intervention type prior to classification, see Appendix C.



PROGRAM STARTS

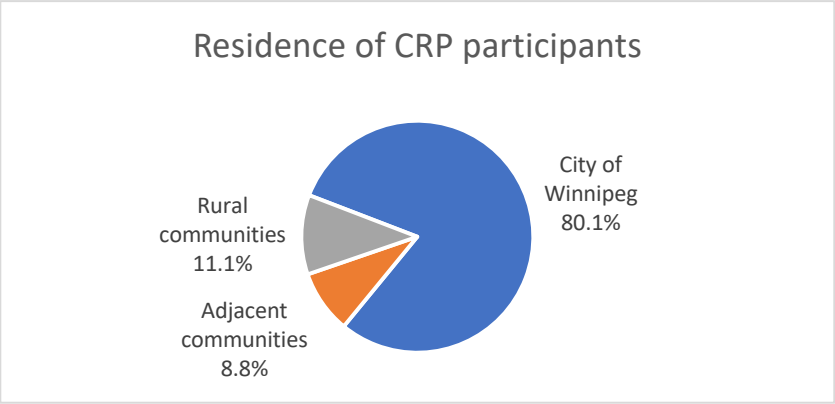
Program starts are the participants who actually started the CRP between April 1, 2019 and March 31, 2020. The participant may have been referred during the previous fiscal year, but started the program during the current fiscal year. In 2019/20, 988 people started the CRP in Winnipeg. Twenty of these people participated in the home-based program.



Who participated in the CRP at the Wellness Institute at SOGH or the Reh-Fit Centre in 2019/20?

- 72.0% were male, 28.0% were female;

- Average age was 63.9 years (range 18 - 93 years);
- 80.1% of participants lived within the Winnipeg perimeter and another 8.8% lived in adjacent communities; 11.1% lived in communities further than a 10-minute drive from the Winnipeg perimeter;



- 77.9% of the participants were married or had a partner;
- 42.1% were employed, and 47.5% were retired or semi-retired. 5.9% of CRP participants were on sick leave or were receiving disability benefits.

Some individuals who received referrals to CRP did not start the program. In many cases, the individuals were not able to be contacted or did not respond to attempts to reach them (42.1%). For 810 individuals who were successfully contacted, information was recorded about the reason for declining the referrals.

- Almost one-half (46.8%) of the 810 individuals who were able to be contacted indicated that they were not interested in participating in the program. A few others had already participated in the program (1.1%) or preferred to take programs at other sites (2.8%).

- Some of the individuals did not want to participate in the program because they lived outside of Winnipeg (7.0%) or had problems with transportation (5.7%).

- Some participants (9.8%) did not participate in the program because of medical issues, including ongoing or worsening health conditions or upcoming medical interventions.

- A number of individuals (4.7%) declined to participate in the CRP because of concerns about COVID-19.

- Based on data for reasons for declining, financial issues were seldom mentioned as a reason for not attending the program (2.2%).

Program Starts by Diagnosis:

27.7% of the ACS cases within the WRHA started the CRP

All program starts were classified according to the participant's primary diagnosis at the time of referral. The diagnosis was categorized as either 'Acute Coronary Syndrome' (which includes myocardial infarction, unstable angina, and ACS NOS), 'Non-ACS', or 'inadequate data'. These classifications are described in further detail in Appendix A ("Definitions").

The table below shows the total number of program starts in 2019/20, according to the participant's primary referral diagnosis and referring hospital. The most frequently-mentioned non-ACS diagnosis among those who had started the CRP was valvular disease (11.4%) followed by stable coronary artery disease (9.0%) and arrhythmia (5.7%). For a summary of the participant's primary diagnosis prior to classification, see Appendix C.

Referring site:	ACS Referrals	Non-ACS referrals	Inadequate data	TOTAL
St. Boniface General Hospital	415	226	1	642
Grace Hospital	50	3	0	53
Health Sciences Centre	33	2	0	35
Seven Oaks General Hospital	16	1	0	17
Concordia Hospital	9	0	0	9
Victoria Hospital	0	1	0	1
Other/outpatient*	78	135	1	214
Non-WRHA hospital	14	3	0	17
TOTAL	**615**	**371**	**2**	**988**

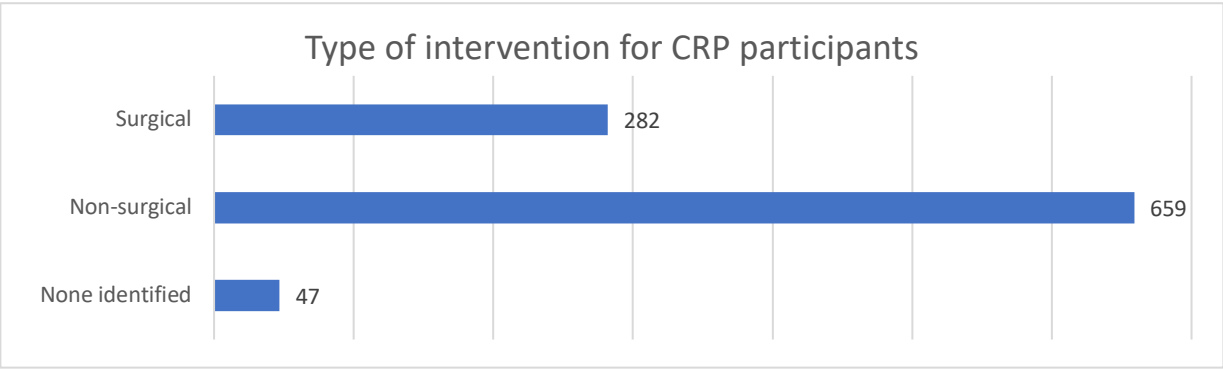
**'Other/outpatient' referrals include patient-initiated referrals or those made by community physicians*

Program starts by intervention:

All program participants were also classified according to the type of intervention that the participant received prior to referral. All program starts were classified as having a surgical intervention, a non-surgical intervention, or no intervention identified (including missing information). These classifications are described in further detail in Appendix A ("Definitions").

34.9% of the cardiac surgical cases within the WRHA started the CRP

In 2019/20, 282 of the participants of the Cardiac Rehabilitation Program had a surgical intervention, and 659 had another type of intervention. The most frequently-mentioned surgical intervention among program participants was CABG (57.4%) followed by valve repair (37.2%). PTCA +/- stent was the most common non-surgical intervention (77.1%), followed by 'other' interventions which included medical management (18.7%). For 47 of the participants, no intervention was identified or the information was missing. For a summary of the types of interventions of program participants prior to classification, see Appendix C.

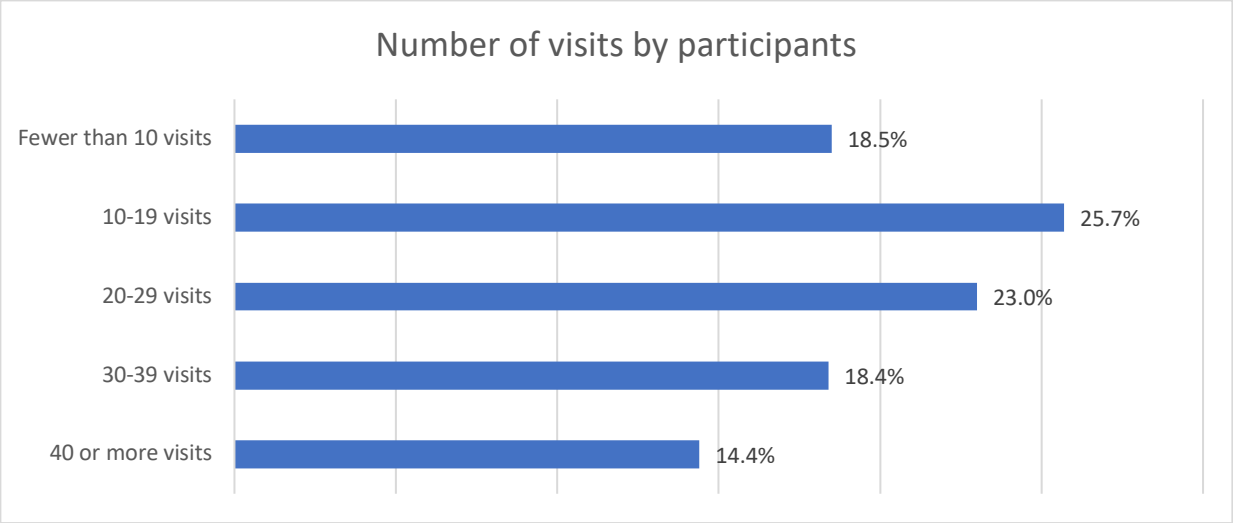


CARDIAC REHABILITATION PROGRAM ATTENDANCE

The majority of participants who started the CRP (77.6%) had a post-program assessment completed.

About 3 in 5 participants (55.8%) attended the cardiac rehabilitation program at least 20 times. A participant attending 20 or more sessions would have attended an average of at least once a week for the full 16-week program. Program attendance represents a significant commitment of time and energy on the part of the participant, their family and supports. Twenty of the individuals who participated in the CRP chose the home-based program, which does not require participants to attend the sites. However, of the participants for whom information is available, one-third (36.4%) had attended or been in contact with the sites at least 20 times during their program.

Many barriers, such as transportation, family support or return to work, can interfere with participants attending the CRP regularly. Consequently the program encourages clients to incorporate physical activity into their lives outside of the structured program. It is not known how frequently CRP participants engage in physical activity outside of the program sites.



Participants who lived within Winnipeg or adjacent communities were significantly more likely to make 20 or more visits to the CRP (58.9%) than participants who lived in adjacent communities (44.9%) or in communities further from Winnipeg (40.3%). The average age of the participants who attended 20 or more times was 65.2 years, which is older than the average age of participants who attended fewer than 20 times (62.7 years). Of the participants who were under the age of 55, 41.6% had attended the program at least 20 times, compared to participants aged 55 to 64 (56.5%), 65 to 74 (61.1%) and 75 or older (59.0%).

REGIONAL PROGRAMS WITH WRHA REFERRALS

Throughout Manitoba and Northern Ontario, there are a number of rehabilitation and wellness programs that receive cardiac rehabilitation referrals from WRHA sources. This data was not included in the CRP program data because it was not specific in terms of type, source or attendance, and was only provided at year end. These referrals are however important to note because they typically increase overall referral rates from by WRHA by over 10%.

A total of 37 cardiac rehabilitation referrals and discharge summaries were forwarded to the Northern Heart Health Program at The Pas Wellness Centre, an increase from 27 referrals in the previous year. Most of these referrals (17) were received from St. Boniface General Hospital; 15 were received from the Seven Oaks General Hospital, three were received from the Heart Failure Clinic, and two from Health Sciences Centre. Twenty of the individuals were male, and 17 were females. In about one-half of the referrals (18 of 37), the primary diagnosis was acute coronary syndrome. Seventeen of the individuals had undergone surgical interventions, with the most common being CABG or valve replacement. Ten individuals had non-surgical interventions such as PTCA +/- stent, and 10 were being medically managed.

The Rehabilitation and Healthy Lifestyles Program in the Thunder Bay Regional Health Sciences Centre received 40 referrals from the Winnipeg region, compared to 32 the previous year. Of these referrals, 15 completed the rehab program, 16 declined to participate and nine individuals were either not appropriate for participation, or were awaiting further procedures.

The cardiac rehabilitation program in Brandon received 248 referrals from the WRHA hospitals this year. Post-surgical referrals made up 130 of these, and 100 individuals referred had interventions such as PTCA +/- stent. Of these referrals, 30 individuals started the CRP in Brandon.

A cardiac rehabilitation program was recently developed in Portage la Prairie. This relatively new program was unable to provide statistics for this annual report.

APPENDIX A: DEFINITIONS

This report includes information on relevant referral and outcome data for the 2019/20 fiscal year. Data collected to track Cardiac Rehabilitation Program (CRP) activity include referrals and program starts. This data is stored within the Electronic Medical Records (EMR) system. Selected CRP data is compared with data obtained from Winnipeg Regional Health Authority (WRHA) to assess the proportion of relevant cases that receive referrals and start the program.

REFERRALS:

Most of the referrals to the Cardiac Rehabilitation Program at The Wellness Institute at Seven Oaks General Hospital and Reh-Fit Centre originate from either WRHA hospitals or outpatient/other sources. Hospital referrals are made by the hospital system using the "Cardiac Rehabilitation Referral Form". This form is faxed to the CR site. Referrals may also come to the sites in the form of a discharge summary. Hospital referrals are received from one of the following Winnipeg hospitals: St. Boniface General Hospital (SBGH), Health Sciences Centre (HSC), Concordia Hospital (CH), Grace General Hospital (GGH), Seven Oaks General Hospital (SOGH), and Victoria General Hospital (VGH). A small number of referrals are received from hospitals outside the WRHA region.

If a participant self-refers, or is referred by a physician, this referral is classified as 'outpatient/other'. In the case of a self-referral, a physician must sign a "Cardiac Rehabilitation General Referral Form" to confirm a cardiac diagnosis and the participant's suitability for the program. Referral forms may be faxed to the physician's office for signature.

For reporting, the total number of referrals is the sum of hospital-generated and outpatient/other referrals received by the program sites between April 1, 2019 and March 31, 2020.

Within the EMR system, when a referral is received at either the Wellness Institute or Reh-Fit Centre, the referral is entered as a program 'prospect'. If the sites are unable to contact the potential participant or if the individual does not choose to enter the program, the status of the referral is then changed to 'declined'. When possible, reasons for declining the referral are recorded.

PROGRAM STARTS:

Program starts are the participants who, after receiving a referral or self-referring, actually start CRP. For those who wish to attend the program, the status of the referral is changed to 'accepted' when registration and payment is received, and 'active' on the first day of the program. The data in this report are presented based on an active date between April 1, 2019 and March 31, 2020. The participant may

have been referred to the program prior to April 1, 2019, but started the program during the current fiscal year.

DIAGNOSIS:

CRP referrals and starts were classified based on the presence of a diagnosis of Acute Coronary Syndrome (ACS). Acute Coronary Syndrome describes a spectrum of conditions, and describes a constellation of signs and symptoms compatible with acute myocardial ischemia. Information about the patient's diagnosis is confirmed from information on the discharge report from the referring hospital.

All referrals and program starts were assigned one of three classifications based on diagnosis: ACS, non-ACS, or 'inadequate data'. The criteria for each of the classifications are:

Acute Coronary Syndrome (ACS)	Non-ACS	Inadequate data
• Acute MI (I21.0 to I21.9) • Subsequent MI (I22.0 to I22.9) • Unstable Angina (I20.0) • ACS, NOS (I24.9)	• Arrhythmia • Stable Coronary Artery Disease • Heart Failure • Congenital Heart Disease • Valvular Disease • Disease of the Aorta • Peripheral Artery Disease • Other	• The Discharge report/CRP referral form received by the program sites does not contain sufficient information to classify based on diagnosis

The number of referrals and program starts with a diagnosis of Acute Coronary Syndrome is compared against data obtained from the Winnipeg Regional Health Authority. WRHA data includes the total number of cases with relevant ACS diagnoses as either the Most Responsible diagnosis (MRDx), a condition that existed prior to admission, or a condition that arose post-admission. Only patients who were discharged home, to a homelike setting with support, or left against medical advice were included in the WRHA total, as these individuals would be eligible to attend the CRP in the community. Those transferred to another acute or long-term care facility were excluded.

INTERVENTION:

All referrals and program starts were assigned one of three classifications based on the type of intervention that the patient received:

Surgical intervention	Non-surgical intervention	No intervention
• Coronary Artery Bypass Graft (CABG) • Ventricular Assisted Device (VAD) • Valve repair/replacement • Transcatheter Aortic Valve Implantation (TAVI) • Thoracic Endovascular Aortic Repair (TEVAR)	• Ablation • PTCA +/- Stent • Heart transplant (not done at SBGH) • ICD insertion • Pacemaker insertion • AAA repair (vascular not cardiac) • PAD revascularization • 'Other'	• No intervention was indicated • This includes empty intervention fields (missing data)

In cases where multiple interventions were indicated, the surgical intervention was entered.

The number of referrals and program starts with a surgical intervention is compared against data obtained from the Winnipeg Regional Health Authority. The WRHA data includes data on inpatients, discharged home or to another acute facility, whose interventions meet the criteria to be classified as surgical.

APPENDIX B: Referrals and Program Starts

Referrals and Program Starts, Monthly, Quarterly and Year-end, Total and by Site

Referrals and Program Starts	April	May	June	1st Qtr	July	Aug.	Sept.	2nd Qtr
TOTAL # of referrals	203	195	204	602	218	179	214	611
Wellness Institute at SOGH	104	110	121	335	125	96	116	337
Reh-Fit Centre	99	85	83	267	93	83	98	274
TOTAL # of program starts	107	92	75	274	81	80	90	251
Wellness Institute at SOGH	52	40	26	118	45	34	44	123
Reh-Fit Centre	55	52	49	156	36	46	46	128

Referrals and Program Starts	Oct.	Nov.	Dec.	3rd Qtr.	Jan.	Feb.	March	4th Qtr	Year-end
TOTAL # of referrals	201	199	233	633	193	179	186	558	2404
Wellness Institute at SOGH	98	96	120	314	95	76	86	257	1243
Reh-Fit Centre	103	103	113	319	98	103	100	301	1161
TOTAL # of program starts	97	87	34	218	98	88	59	245	988
Wellness Institute at SOGH	36	35	3	74	38	38	27	103	418
Reh-Fit Centre	61	52	31	144	60	50	32	142	570

Referrals based on referral dates (receipt of referral from hospital or self-referral) between April 1, 2019 and March 31, 2020
Program starts based on active start dates (first date of CRP class) between April 1, 2019 and March 31, 2020

Referrals and Program Starts, Quarterly, by Referring Hospital and Primary Diagnosis

REFERRALS

Diagnosis	Referring Hospital	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
ACS	Concordia General Hospital	8	0	0	0
	Grace Hospital	26	23	21	7
	Health Sciences Centre	36	10	7	5
	St. Boniface General Hospital	217	281	319	272
	Seven Oaks General Hospital	20	10	1	1
	Victoria General Hospital	0	0	2	0
	Other/outpatient	24	34	36	26
	Non-WRHA Hospital	9	3	4	1

Diagnosis	Referring Hospital	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Non-ACS	Concordia General Hospital	1	0	0	0
	Grace Hospital	5	1	0	0
	Health Sciences Centre	1	0	0	0
	St. Boniface General Hospital	165	183	173	194
	Seven Oaks General Hospital	2	1	1	0
	Victoria General Hospital	0	0	0	1
	Other/outpatient	68	58	59	45
	Non-WRHA Hospital	4	0	1	3
Inadequate Data	Concordia General Hospital	3	0	0	0
	Grace Hospital	0	1	0	0
	Health Sciences Centre	0	0	1	0
	St. Boniface General Hospital	2	1	5	0
	Seven Oaks General Hospital	8	1	0	0
	Victoria General Hospital	0	0	0	0
	Other/outpatient	3	4	3	3
	Non-WRHA Hospital	0	0	0	0

PROGRAM STARTS

Diagnosis	Referring Hospital	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
ACS	Concordia General Hospital	6	2	1	0
	Grace Hospital	13	14	15	8
	Health Sciences Centre	18	9	6	0
	St. Boniface General Hospital	101	105	95	114
	Seven Oaks General Hospital	7	8	1	0
	Victoria General Hospital	0	0	0	0
	Other/outpatient	20	20	18	20
	Non-WRHA Hospital	3	5	3	3
Non-ACS	Concordia General Hospital	0	0	0	0
	Grace Hospital	1	2	0	0
	Health Sciences Centre	1	0	0	1
	St. Boniface General Hospital	60	58	50	58
	Seven Oaks General Hospital	1	0	0	0
	Victoria General Hospital	1	0	0	0
	Other/outpatient	41	27	27	40
	Non-WRHA Hospital	1	1	1	0
Inadequate Data	Concordia General Hospital	0	0	0	0
	Grace Hospital	0	0	0	0
	Health Sciences Centre	0	0	0	0
	St. Boniface General Hospital	0	0	0	1
	Seven Oaks General Hospital	0	0	0	0
	Victoria General Hospital	0	0	0	0
	Other/outpatient	0	0	1	0
	Non-WRHA Hospital	0	0	0	0

APPENDIX C: Referral Diagnosis and Intervention, prior to categorization

Diagnosis	Referrals		Program starts	
	#	%	#	%
Acute Coronary Syndrome	1403	58.3	615	62.2
Arrhythmia	85	3.5	56	5.7
Cardiomyopathy	87	3.6	21	2.1
Congenital Heart Disease	9	0.4	8	0.8
Coronary Artery Disease	0	0	0	0
Disease of the Aorta	46	1.9	13	1.3
Heart Failure	232	9.7	47	4.8
Other	42	1.7	22	2.2
Peripheral Artery Disease	2	0.1	1	0.1
Stable Angina	0	0	1	0.1
Stable Coronary Artery Disease	157	6.5	89	9.0
Valvular Disease	306	12.7	113	11.4
Inadequate data	35	1.5	2	0.2
Missing data	0	0	0	0

Intervention	Referrals		Program starts	
	#	%	#	%
AAA repair	10	0.4	3	0.3
Ablation	7	0.3	5	0.5
CABG	368	15.3	162	16.4
Heart Transplant	0	0	0	0
ICD Insertion	15	0.6	12	1.2
Pacemaker Insertion	12	0.5	8	0.8
PAD Revascularization	1	<0.1	0	0
PTCA +/- Stent	1045	43.5	508	51.4
TAVI	60	2.5	9	0.9
TEVAR	5	0.2	0	0
VAD	9	0.4	6	0.6
Valve Repair	256	10.6	105	10.6
Other	343	14.3	123	12.4
None Identified	273	11.3	47	4.8
Missing/blank	0	0	0	0