



# CARDIAC REHABILITATION

Winnipeg Region  
Annual Report  
2015-16



**LIVE** Longer.  
**E** Stronger.

## PROGRAM OVERVIEW



The Cardiac Rehabilitation Program (CRP) operates out of two 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. 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 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 Cardiac Rehabilitation Program extends the continuum of care from hospital to the community. Successful referral processes are a key component. The program has recently revised hospital referral data collection and aligned the corresponding electronic medical record (EMR) categories in an effort to better reflect referral data in upcoming reports, as well as inform improved referral processes and rates.

Access to Cardiac Rehabilitation is an important factor affecting successful outcomes post discharge. Consequently, a home program pilot was initiated this year, targeting lower risk cardiac patients who were unable to attend the site based program. Comprehensive initial assessment and risk screening, regular contact with rehabilitation team members as well as monitoring of patient progress was incorporated into the home program.

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 INDICATORS/BENEFITS TO PARTICIPANTS

Participants in Cardiac Rehabilitation programs across Canada typically show improvement in their 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 demonstrate the significant and positive benefits of participation in this program:

- Brief Symptoms Inventory (BSI)
- Total blood cholesterol levels
- Waist girth,
- MET levels,
- SF-36 Mental Health Summary Score and
- SF-36 Physical Health Summary Score.

Changes in outcome variables were examined only for those participants with both pre- and post-data. 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.

## Brief Symptoms Inventory (BSI)

BSI provides an overview of a participant's psychological symptoms and their intensity at a specific point in time. The BSI-Grand Severity Index gives psychologists and other healthcare professionals a single composite score that can be used to assess participants 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 Grand Severity Index score.

Overall, there was a significant decrease in the overall BSI scores from the beginning of the CRP to the conclusion of the program, from GSI=0.44 to GSI=0.38 ( $t=5.03$ ,  $df=650$ ,  $p<.000$ ). Female participants had a significantly larger decrease in GSI scores, compared with male participants.

## Total Blood Cholesterol

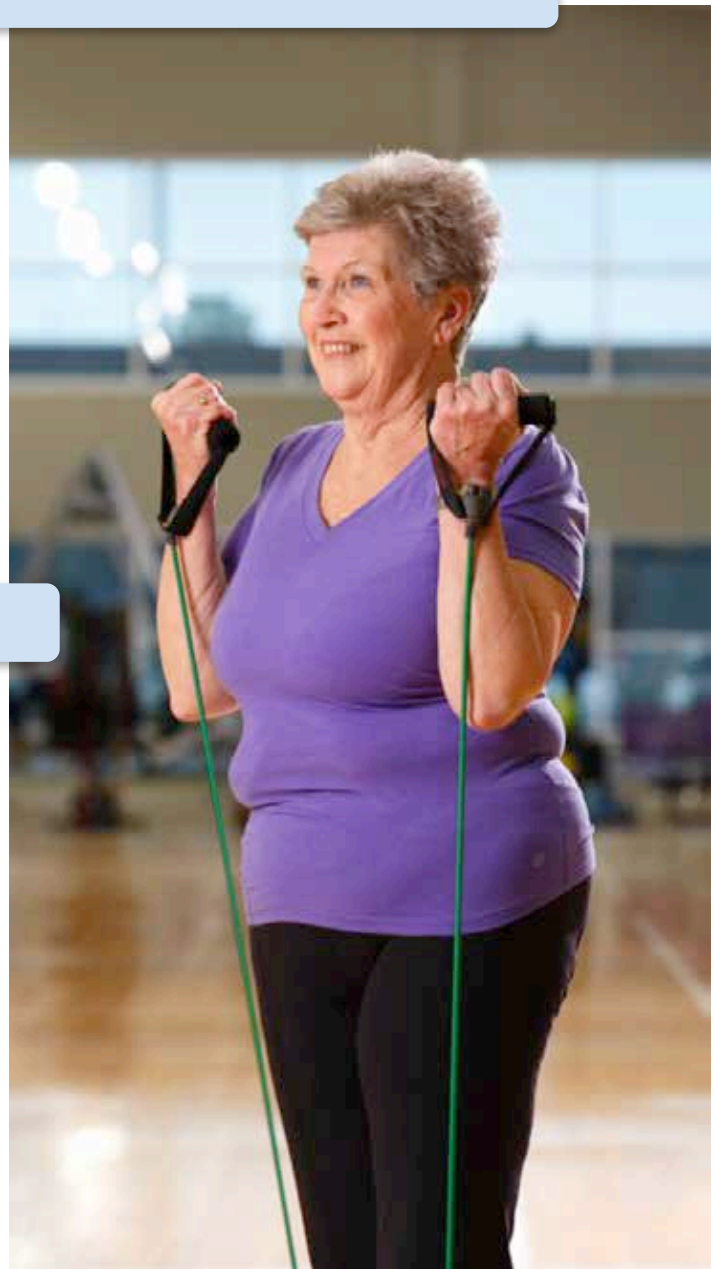
When blood cholesterol is too high, it builds up in the walls of the arteries and blood flow to the heart muscle is slowed down or blocked. Total blood cholesterol is a cardiac risk factor that should decrease following the cardiac rehabilitation intervention. A positive outcome for program participants 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 3.92 mmol/L to 3.80 mmol/L ( $t=2.94$ ,  $df=646$ ,  $p<.01$ ).

## 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 101.31 cm at the beginning to 100.29 cm at the conclusion of the program ( $t=5.02$ ,  $df=755$ ,  $p<.001$ ). The reduction in waist girth experienced by participants was similar regardless of gender or age.



## 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 ( $t=23.64$ ,  $df=739$ ,  $p<.001$ ). The peak MET level increased from an average of 6.78 METS to 8.23 METS over the course of the CRP. There was a significant negative correlation between age and the size of the change in the MET levels, so younger CRP participants experienced a greater gain in MET levels than did older participants. In addition the change in MET levels was significantly greater for male participants than for female participants.

## SF-36 Summary Measures

The SF-36 is a widely used Health Survey that assesses quality of life. 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 48.8 to 51.4 ( $t=-5.63$ ,  $df=612$ ,  $p<.001$ ). Women had a greater improvement in psychological quality of life, compared to men.

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.

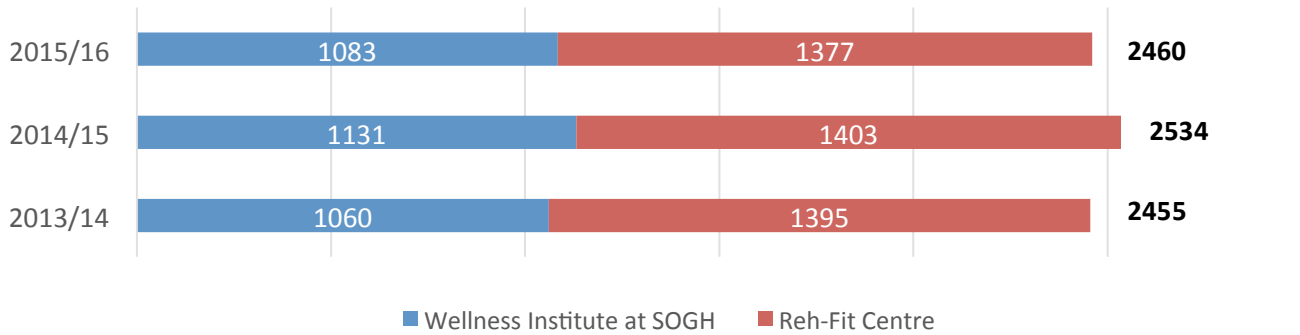
CRP participants saw a significant increase in their Physical Health Summary Score, from an average score of 37.3 at the beginning of the program to 44.8 at the program's conclusion ( $t=-17.60$ ,  $df=608$ ,  $p<.001$ ). Men experienced a greater improvement in their physical health quality of life than did women, and younger participants showed more improvement than older participants.



# REFERRALS

The total number of referrals received by the Cardiac Rehabilitation Program consisted of all referrals that were received between April 1, 2015 and March 31, 2016. Overall, there were 2460 Winnipeg referrals to the CRP.

## Total Referrals by Site: 2013-2016



*For a breakdown of program referrals by month/quarter, see Appendix B.*

### Who was referred to the CRP at the Wellness Institute at SOGH or the Reh-Fit Centre in 2015/16?

- 71.0% were male, 29.0% were female
- Average age was 64.8 years (range 19 – 98 years). Almost one-third of the individuals who received a referral (31.0%) were between the ages of 60 and 69, and 24.5% were aged 70-79 years.
- The average age of men who received a CRP referral (63.8 years) was significantly younger than the average age of women (67.1 years)
- 73.1% lived within the Winnipeg perimeter.
- The four community hospitals gave a larger proportion of referrals to non-Winnipeg residents, compared with the two larger hospitals

## Referral Types:

- In 2015/16, 33.4% of cardiac rehabilitation referrals\* to Reh-Fit Centre and the Wellness Institute were from the Acute Myocardial Infarction (AMI) care map. This includes all referrals generated from the 5A unit at St. Boniface General Hospital.
- Just over one-quarter of the referrals (27.8%) were post-surgical referrals from St. Boniface General Hospital.
- Approximately one quarter (24.7%) of referrals were classified as 'other' referrals. This includes non-surgical referrals that do not fall under the category of AMI care map, such as individuals with unstable angina. This also included all referrals from the Cath lab and the Heart Failure Clinic.
- Of the total number of referrals received, overall and by each site, the table below shows the proportion that were classified by each type of referral, with comparisons to the previous two years.

Referral Type	Site	2015/16	2014/15	2013/14
<b>Acute Myocardial Infarction (AMI) care map referrals</b>	<b>Both sites</b>	<b>33.4%</b>	<b>33.0%</b>	<b>23.0%</b>
	Reh-Fit Centre	28.9%	29.4%	18.5%
	Wellness Institute	39.2%	37.3%	28.2%
<b>Post-surgical referrals</b>	<b>Both sites</b>	<b>27.8%</b>	<b>26.8%</b>	<b>27.5%</b>
	Reh-Fit Centre	28.1%	28.0%	27.8%
	Wellness Institute	27.3%	25.4%	27.2%
<b>Other referrals</b> <i>(such as unstable angina, including referrals from Cath Lab and Heart Failure Clinic)</i>	<b>Both sites</b>	<b>24.7%</b>	<b>27.0%</b>	<b>34.5%</b>
	Reh-Fit Centre	26.2%	27.0%	34.5%
	Wellness Institute	22.7%	27.1%	33.5%
<b>General referrals</b> <i>(self-referred or physician-referred)</i>	<b>Both sites</b>	<b>14.1%</b>	<b>13.2%</b>	<b>15.0%</b>
	Reh-Fit Centre	16.8%	15.5%	18.4%
	Wellness Institute	10.7%	10.3%	11.2%

*For a breakdown of referrals by referral type and hospital referring site, see Appendix C*

84.4% of the 809 cardiac surgical cases within the WRHA received a referral to the CRP

53.2% of the 1544 AMI cases within the WRHA received a referral to the CRP

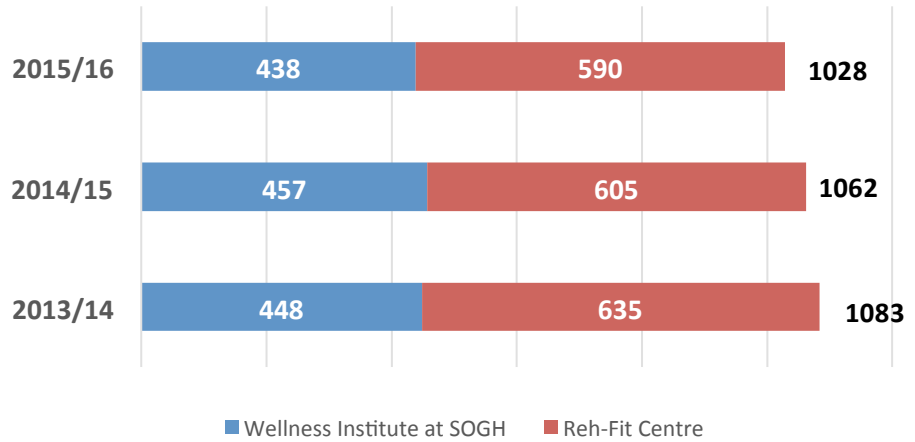
\*Another 172 referrals were made by WRHA hospitals to programs outside the city of Winnipeg. This data was not included in the CRP program data because it was not specific in terms of type, source or attendance, and was only provided at year end. These referrals are however important to note because they increase overall referral rates from WRHA sites by about 9%.



## PROGRAM STARTS

Program starts are the participants who start the CRP between April 1, 2015 and March 31, 2016. The participant may have been referred during the previous fiscal year, but started the program during the current fiscal year. In 2015/16, 1028 people started the CRP in Winnipeg.

Program Starts by Site: 2013-2016



*For a breakdown of program starts by month/quarter, see Appendix B.*

### Who started the CRP at the Wellness Institute at SOGH or the Reh-Fit Centre in 2015/16?



- 71.5% were male, 28.5% were female
- Average age was 62.5 years (range 26 – 91 years). There was no difference in the average age of male versus female program participants.
- 81.8% of participants lived within the Winnipeg perimeter
- 76.2% of the participants were married.
- 46.2% were employed, and 44.9% were retired or semi-retired. 5.8% of CRP participants were on Disability benefits.
- Some individuals who received referrals to CRP did not start the program.
- For about one in five referred individuals the referral did not result in a program start because they were not interested (20.6%), or for other reasons (18.0%). Other reasons included receiving a duplicate referral for the program, the individual had already done or was in the program, and choosing to attend the program at a different site. Health issues and personal circumstances that prevented participation also fell under this category.
- Very few of the individuals did not participate because they lived rurally (3.1%), had transportation problems (2.5%) or for financial reasons (0.3%).



## Program Starts by Referral Type:

- In 2015/16, participants who had received referrals from the AMI care map made up the largest proportion of program starts (29.0%).
- Individuals who were referred post-surgical represented 27.8% of the program starts. A similar proportion of program starts came from self-referrals or referrals by physicians (26.1%).
- Of the total number of program starts, overall and for each site, the table below shows the proportion of starts that resulted from each type of referral, with comparisons to the previous two years.

Referral Type	Site	2015/16	2014/15	2013/14
<b>Acute Myocardial Infarction (AMI) care map referrals</b>	<b>Both sites</b>	<b>29.0%</b>	<b>26.8%</b>	<b>20.1%</b>
	Reh-Fit Centre	28.4%	24.8%	16.9%
	Wellness Institute	29.9%	29.5%	23.7%
<b>Post-surgical referrals</b>	<b>Both sites</b>	<b>27.8%</b>	<b>28.4%</b>	<b>28.4%</b>
	Reh-Fit Centre	21.7%	24.8%	23.7%
	Wellness Institute	36.1%	33.3%	33.4%
<b>Other referrals</b> <i>(such as unstable angina, including referrals from Cath Lab and Heart Failure Clinic)</i>	<b>Both sites</b>	<b>17.0%</b>	<b>18.5%</b>	<b>23.1%</b>
	Reh-Fit Centre	17.1%	18.3%	23.7%
	Wellness Institute	16.9%	18.6%	22.5%
<b>General referrals</b> <i>(self-referred or physician-referred)</i>	<b>Both sites</b>	<b>26.1%</b>	<b>26.3%</b>	<b>28.4%</b>
	Reh-Fit Centre	32.8%	32.1%	35.7%
	Wellness Institute	17.1%	18.6%	20.4%

For a breakdown of starts by referral type and hospital referring site, see Appendix C



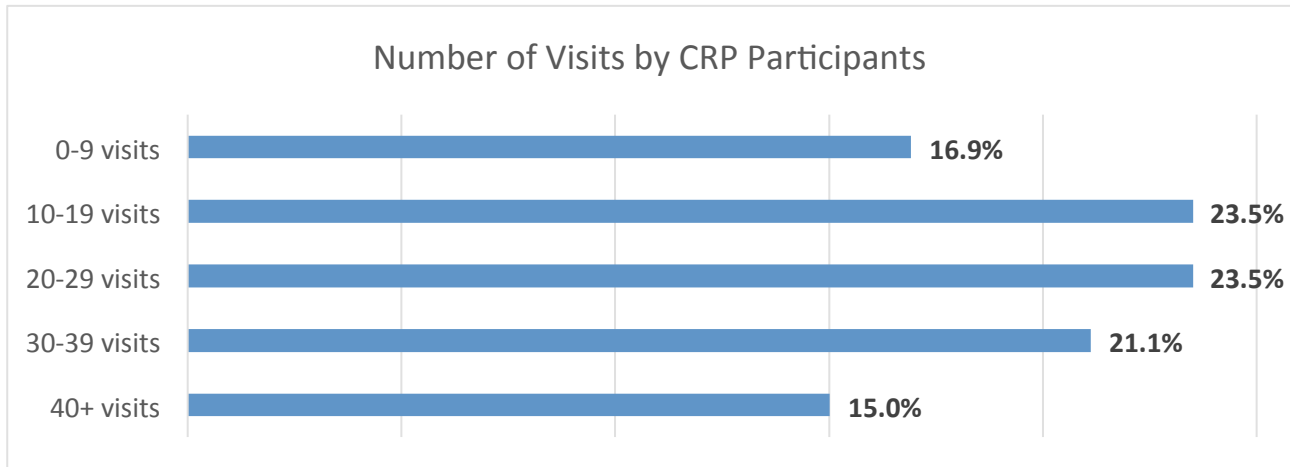
19.3% of the 1544 AMI cases within the WRHA started the CRP

35.4% of the 809 cardiac surgical cases within the WRHA started the CRP

## CARDIAC REHAB PROGRAM ATTENDANCE

Of the 1028 participants who started the CRP, program exit information is available for 776 individuals. Of those, 86.4% were identified as “completed”, which means that a post-program assessment was completed.

Three-fifths (59.6%) of the program participants in 2015/16 attended the CRP 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.



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.

Participants who lived within Winnipeg were significantly more likely to make 20 or more visits to the CRP (62.1%) than participants who lived outside of Winnipeg (49.3%). Older participants were also more likely to attend the program more frequently; the average age of participants who had attended fewer than 20 times was 59.6 years, compared to an average age of 63.7 years for participants who attended 20 or more times.

## REGIONAL PROGRAMS WITH WRHA REFERRALS

Throughout Manitoba there are a number of rehabilitation and wellness programs that receive cardiac rehabilitation referrals from WRHA sources.

For the cardiac rehabilitation that operates out of The Pas Wellness Centre, 32 referrals were received between April 2015 and March 2016 from St. Boniface General Hospital in Winnipeg. Of these, 26 were the result of surgical procedures, and six came from the Heart Failure Clinic.

Between July 2015 and March 2016, approximately 140 people were referred from the WRHA hospitals to the cardiac rehabilitation program in Brandon. Most of these (122) resulted from surgical procedures, and 18 came from the Heart Failure Clinic at St. Boniface General Hospital.

## Appendix A: Definitions

This report includes information on relevant referral and outcome data for the 2015/16 fiscal year. There are several types of data collected to track Cardiac Rehabilitation Program (CRP) activity. In general, the main types of data collected are referrals, and program starts. Information about the total number of AMI and cardiac surgical cases in the region is obtained from Winnipeg Regional Health Authority (WRHA) data.

### **REFERRALS:**

There are two types of referrals received by the CRP: Hospital and General.

**1. Hospital Referrals:** Hospital referrals are automatic referrals made by the hospital system using the “Cardiac Rehabilitation Referral Form”. This form is faxed to the CR site. The following hospital programs automatically refer to CR:

#### **Types:**

**Post Surgical:** Cardiac surgery patient referrals from SBGH.

**AMI Care Map:** MI patient referrals using the Acute Myocardial Infarction (AMI) Care Map that originate from Winnipeg Hospitals only. For the purposes of this report, referrals received from 5A at St. Boniface General Hospital were included with the AMI referrals.

**Other:** Initiated at a hospital source using a referral form similar to the MI Care Map but for other diagnosis, e.g. Unstable Angina or CHF. In this report, referrals from the Cath Lab and the Heart Failure Clinic were included in the Other category.



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).

**2. General Referral :** Using the “Cardiac Rehabilitation General Referral Form”, a participant may self-refer or may be referred by a primary care provider (PCP). In the case of a self-referral, a PCP must sign a CR General Referral Form to confirm a cardiac diagnosis and the participant’s suitability for the program. Referral forms may be faxed to the PCP’s office for signature.

## OTHER DEFINITIONS:

**Total Referral Types:** The total sum of hospital and general referrals.

**Referring Hospital:** The hospital from which the referral originated. *For purposes of reporting, the data in this report are presented based on referral type (acute MI care map, post-surgery, general and other). All referral data are based on the participants' referral date between April 1, 2015 and March 31, 2016.*

**Program starts:** Program starts are the participants who, after receiving a referral or self-referring, start CRP. *For purposes of reporting, the data in this report are presented based on start date between April 1, 2015 and March 31, 2016.* The participant may have been referred during the previous fiscal year, but started the program during the current fiscal year. Therefore, the percentage of starts out of referrals cannot be calculated.

**Utilization Data:** The number of referrals and program starts are compared to the total number of AMI and surgical cases reported within the WRHA.

The number of AMI referrals and program starts are compared to the number of AMI cases as provided by the WRHA. AMI cases include cases in which AMI was Most Reasonable Diagnosis, and in which patient was discharged home, or discharged to a home setting with support.

The number of post-surgical referrals and program starts are compared to the number of cardiac surgeries that were performed, as provided by the WRHA.



## Appendix B: Referrals and Program Starts, Monthly, Quarterly and Year-end, Total and by Site

<b>Referrals and Program Starts</b>	April	May	June	<b>1st Qtr</b>	July	Aug.	Sept.	<b>2nd Qtr.</b>
<b>TOTAL # of referrals</b>	215	227	216	<b>658</b>	221	212	188	<b>621</b>
Wellness Institute at SOGH	87	101	88	<b>276</b>	93	94	89	<b>276</b>
Reh-Fit Centre	128	126	128	<b>382</b>	128	118	99	<b>345</b>
<b>TOTAL # of program starts</b>	95	98	66	<b>259</b>	74	68	109	<b>251</b>
Wellness Institute at SOGH	37	36	29	<b>102</b>	33	30	44	<b>107</b>
Reh-Fit Centre	58	62	37	<b>157</b>	41	38	65	<b>144</b>

<b>Referrals and Program Starts</b>	Oct.	Nov.	Dec.	<b>3rd Qtr</b>	Jan.	Feb.	March	<b>4th Qtr.</b>	Year-end
<b>TOTAL # of referrals</b>	219	215	174	<b>608</b>	204	185	184	<b>573</b>	<b>2460</b>
Wellness Institute at SOGH	95	100	94	<b>289</b>	88	77	77	<b>242</b>	<b>1083</b>
Reh-Fit Centre	124	115	80	<b>319</b>	116	108	107	<b>331</b>	<b>1377</b>
<b>TOTAL # of program starts</b>	85	80	73	<b>238</b>	101	96	83	<b>280</b>	<b>1028</b>
Wellness Institute at SOGH	46	36	38	<b>120</b>	42	38	29	<b>109</b>	<b>438</b>
Reh-Fit Centre	39	44	35	<b>118</b>	59	58	54	<b>171</b>	<b>590</b>

\* Referrals based on referral dates (discharge dates) between April 1, 2015 and March 31, 2016  
 Program starts based on start dates between April 1, 2015 and March 31, 2016

\*Another 172 referrals were made by WRHA hospitals to programs outside the city of Winnipeg. 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 increase overall referral rates from WRHA sites by about 9%.

## Appendix C: Referrals and Program Starts by Referral Type and Quarter\*

Referrals to CRP by Hospital, Type	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year End
<b>AMI:</b>	<b>TOTAL:</b>				<b>822</b>
Concordia General Hospital	6	9	7	11	33
Grace Hospital	3	9	4	7	23
Health Sciences Centre	20	18	31	8	77
Seven Oaks General Hospital	17	14	26	17	74
St. Boniface General Hospital	129	130	126	138	523
Victoria General Hospital	35	8	20	29	92
<b>Surgical:</b> St. Boniface General Hospital	181	176	172	154	<b>683</b>
<b>Other:</b>	<b>TOTAL:</b>				<b>607</b>
Concordia General Hospital	6	7	13	3	29
Grace Hospital	23	16	14	16	69
Health Sciences Centre	19	13	7	2	41
Seven Oaks General Hospital	16	16	10	14	56
St. Boniface General Hospital	110	104	88	80	382
Victoria General Hospital	6	20	2	2	30
<b>General</b>	<b>88</b>	<b>81</b>	<b>87</b>	<b>92</b>	<b>348</b>

CRP Starts by Hospital, Type	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year End
<b>AMI:</b>	<b>TOTAL:</b>				<b>298</b>
Concordia General Hospital	2	3	3	5	13
Grace Hospital	1	2	1	4	8
Health Sciences Centre	8	11	8	13	40
Seven Oaks General Hospital	9	3	10	8	30
St. Boniface General Hospital	51	46	26	47	170
Victoria General Hospital	10	9	2	16	37
<b>Surgical:</b> St. Boniface General Hospital	55	79	76	76	<b>286</b>
<b>Other:</b>	<b>TOTAL:</b>				<b>175</b>
Concordia General Hospital	6	1	1	4	12
Grace Hospital	5	8	7	4	24
Health Sciences Centre	10	2	6	1	19
Seven Oaks General Hospital	3	6	4	5	18
St. Boniface General Hospital	30	16	22	21	89
Victoria General Hospital	2	9	2	0	13
<b>General</b>	<b>67</b>	<b>55</b>	<b>70</b>	<b>76</b>	<b>268</b>

\* Referrals based on referral dates (discharge dates) between April 1, 2015 and March 31, 2016

\* Program starts based on start dates between April 1, 2015 and March 31, 2016